REVISION TO THE MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR DEVELOPMENT PLAN

MARCH 2000

Submitted to:

City of Albuquerque
Public Works Department
PO Box 1293
Albuquerque, New Mexico 87103

Prepared for:

Curb, Inc.
6301 Indian School Road, NE
Bo Johnson, Agent

Prepared by:

URS Greiner Woodward Clyde
5971 Jefferson Blvd., NE, Suite 101
Albuquerque, New Mexico 87109

Daniel L. Morehead PE & PS
Vice President

Mark S. Holstad, PE
Project Manager

MARK S. HOLSTAD
NEW MEXICO
No. 7288
REGISTERED PROFESSIONAL ENGINEER

3/16/2000

URS Greiner Woodward Clyde Job No. E300001496.01

AMAFCA

REVISION TO THE MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR DEVELOPMENT PLAN

MARCH 2000

Submitted to:

City of Albuquerque
Public Works Department
PO Box 1293
Albuquerque, New Mexico 87103

Prepared for:

Curb, Inc.
6301 Indian School Road, NE
Bo Johnson, Agent

Prepared by:

URS Greiner Woodward Clyde
5971 Jefferson Blvd., NE, Suite 101
Albuquerque, New Mexico 87109

Daniel L. Morehead PE & PS
Vice President

Mark S. Holstad, PE
Project Manager

URS Greiner Woodward Clyde Job No. E300001496.01

REVISION TO THE MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR DEVELOPMENT PLAN

TABLE OF CONTENTS

AHYMO DISK POCKET

APPENDICES

PROJECT DESCRIPTION

OVERVIEW

The Rio Bravo Sector Development Plan (RBSDP) was originally approved December 22, 1988 under SD-87-4. Community Sciences Corporation (CSC) prepared Amendment No. 1 to the RBSDP, which was approved by the EPC on July 29, 1999 and is currently under DRB review. A requirement of Amendment No. 1 is the updating of the Master Drainage Plan for the Rio Bravo Sector Development Plan. The subject report, "Revision to the Master Drainage Plan for the Rio Bravo Sector Development Plan", referred to as RBSDP-MDP, provides the required update.

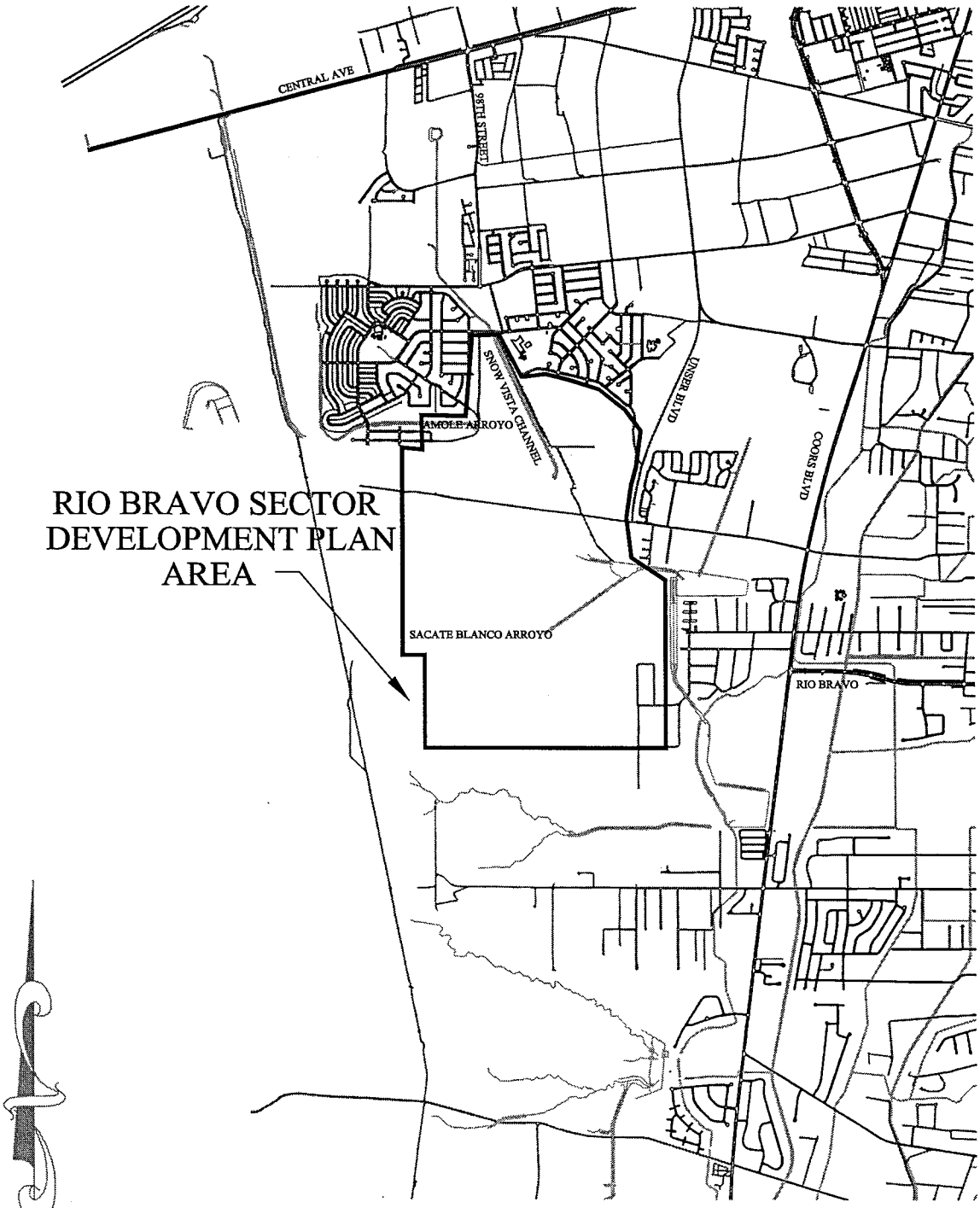
The subject report is in compliance with the requirements of the Amole-Hubbell Drainage Management Plan. Free discharge is proposed for the study area. All off-site basins are intercepted. [See the Hydrology and Hydraulics Sections.]

PROJECT LOCATION

The RBSDP area is shown in the Vicinity Map on page 2. The site layout of the RBSDP is shown on the Drainage Masterplan Exhibit in the pocket.

PRE-ANALYSIS MEETINGS

Meetings were held with the City of Albuquerque on 11/5/99 to establish criteria for the reanalysis. Minutes from this meeting are attached. Meetings were also held with AMAFCA on 11/11/99 (attendees were Don Dixon - AMAFCA, Lisa Manwill – AMAFCA, Susan Calongne – COA, Bo Johnson – Curb, Inc., Mark Holstad – URSGWC), on 1/14/2000 with Bernalillo County (attendees were Bob Foglesong – Bernalillo County and Mark Holstad – URSGWC) and on 1/28/00 with D. Mark Goodwin & Associates (attendees were Gregory Krenik – DMG, Chris Rosol – URSGWC and Mark Holstad – URSGWC). The purpose of these meetings was to coordinate various needs and to gather data and reports. No minutes were recorded.



VICINITY MAP

PREVIOUS STUDIES

DISCUSSION

A number of previous and on-going studies were incorporated in preparing this Revision to the Master Drainage Plan for the Rio Bravo Sector Development Plan. The following previous studies and one on-going study were utilized:

1) Master Drainage Plan for Rio Bravo Sector Plan.
   a) Isaacson & Arfman, P.A.
   b) June 1988.
   c) This report was written to delineate drainage conditions and required improvements for the previous Sector Development Plan. The RBSDP-MDP by URSGWC updates the Isaacson & Arfman Report to current conditions and criteria.
   d) Referred to as I/A-MDP.

2) Amole-Hubbell Drainage Management Plan.
   a) Leedshill-Herkenhoff, Inc.
   b) July 22, 1999.
   c) This report addresses a very large area, of which the RBSDP is a part. Major improvements are proposed which will handle large flows and protect large areas.
   d) The AH-DMP addressed drainage within existing drainage basins. The basins within or upstream of the RBSDP-MDP are the Amole Arroyo Basin, the South Powerline Channel Basin, the Secate Blanco Basin, the Rio Bravo Basin, the Snow Vista Basin and the Borrega Basin. The recommendations of the AH-DMP for these basins as they relate to the RBSDP area are provided below along with the implications of the RBSDP-MDP.
   e) Electronic copies of the AHYMO analyses and the basin mapping from the Amole-Hubbell Drainage Management Plan were provided to URSGWC.
      i) These AHYMO analyses were used as the basis for:
         (1) Off-site flows impacting the RBSDP area.
         (2) Proposed improved conditions of the major facilities proposed by the Amole-Hubbell Drainage Management Plan, i.e., the Amole Arroyo, the Secate Blanco, the Rio Bravo Channel, and the South Powerline Diversion facilities.
   f) Assumptions taken from this report included:
      i) Developed conditions and basins for areas upstream of the RBSDP.
      ii) Future improvements as proposed within or upstream of the RBSDP.
         (1) Amole Arroyo.
         (2) Secate Blanco Major Conveyance Arroyo.
         (3) South Powerline Diversion Channel Detention.
      iii) Free discharge within the RBSDP area.
   g) Referred to as the AH-DMP.

3) Addendum to the Master Drainage Plan for the Rio Bravo Sector Plan.
   a) D. Mark Goodwin & Associates (DMG).
   b) September 21, 1998.

c) This report addresses drainage in the northwest portion of the RBSDP, specifically the area east of the Amole Arroyo and north of Blake.
d) The findings and recommendations of this study are directly implemented for the area south of Gibson and east of the Amole Arroyo. Slight modifications to tract configurations are made in accordance with Amendment No. 1 of the RBSDP. The area north of Gibson is addressed in the Drainage Report for El Ranch Grande I, Units 1 & 2 described below.
e) Referred to as the MDP-DMG.

4) Final Drainage Report for Rio Bravo West Extension.
a) Avid Engineering, Inc.
b) July 1993.
c) This report provides the hydrology for the design of the open channel running along the north side of Rio Bravo Road. This road and channel extension is out for bid and will be constructed in 2000.
d) The results of the Avid study are implemented in the AH-DMP.
e) Referred to as the RBW-Avid.

5) Drainage Report for El Rancho Grande I, Units 1 & 2.
a) D. Mark Goodwin & Associates (DMG).
b) February 18, 2000. Currently under review by the City of Albuquerque.
c) The current subdivision layout for the area north of Gibson and east of the Amole Arroyo is shown in the Drainage Masterplan Exhibit.
d) This report addresses the area north of Gibson and east of the Amole Arroyo. The outfalls for this area are an existing storm drain which flows through the Vista Del Sol Mobile Home Park and an existing storm drain which flows north in Unser. Neither of these outfalls will be utilized for the area south of Gibson. Therefore, the area north of Gibson and east of the Amole Arroyo is hydrologically/hydraulically independent of the area south of Gibson and east of the Amole Arroyo.
e) Referred to as the DR-ERGI.
f) Drainage for the northeast portion of the RBSDP (north of Gibson and east of the Amole Arroyo) is therefore not evaluated in this URSGWC Report. Drainage for this area is recommended to be per the requirements of the DMG Silverado Drainage Plan.

6) Borrega Dam.
a) Wilson & Co.
b) Currently under preparation by Wilson & Co. for AMAFCA.
c) Drainage basin to the proposed Borrega Dam was coordinated with Nancy Musinski at Wilson & Co. The remaining area south of the Rio Bravo corridor was routed to the Rio Bravo Channel.

MODIFICATIONS TO I/A-MDP

The following revisions were made to the I/A-MDP.

1) The layout of streets and parcels are modified per the current RBSDP.
   a) CSC provided electronic mapping dated 11-23-99.
   b) With the exception of the realignment of Rio Bravo per impending construction, the parcel and street layout are not significantly modified from the layout of the original RBSDP as approved in 1988.
2) Hydrology was analyzed utilizing AHYMO.
3) Future improvements are assumed per the AH-DMP report.
4) The entire 100-year flow is modeled to be conveyed within the proposed storm drainage pipes. Street flows are not typically considered in this report. Future designers will consider possible pipe size reductions, or even elimination of some pipes, during the street design phase when final street configurations are known.

MODIFICATIONS TO THE AMOLE-HUBBELL DRAINAGE MANAGEMENT PLAN

The following modifications were made to the AH-DMP:

1) The basins within the RBSDP were modified per the proposed development layout. Land treatments within the RBSDP were modified per the proposed zoning.
2) Offsite basins draining through the RBSDP per the AH-DMP study were intercepted and routed through the RBSDP area.
3) The Secate Blanco Avulsion Conveyance is proposed to tie to the South Secate Blanco Arroyo Conveyance.

These modifications were all within the parameters of the recommendations of the A-H DMP.

With the exception of the tie of the Secate Blanco Avulsion Conveyance to the South Secate Blanco Arroyo Conveyance, RBSDP-MDP flow rates and volumes are comparable to those in the AH-DMP for the Amole Arroyo, Secate Blanco, and Rio Bravo Channel.

AH-DMP RECOMMENDATIONS, RBSDP RECOMMENDATIONS AND IMPLICATIONS OF THE RBSDP-MDP

GENERAL

The AH-DMP addressed drainage within existing drainage basins. The basins within or upstream of the RBSDP-MDP are the Snow Vista Basin, Amole Arroyo Basin, the South Powerline Channel Basin, the Secate Blanco Basin, the Rio Bravo Basin and the Borrega Basin. The recommendations of the AH-DMP for these basins, as they relate to the RBSDP area, are provided below along with the recommendations of the RBSDP and the proposed improvements per the RBSDP-MDP. The Snow Vista and Borrega Basins are discussed under the Amole Arroyo and Rio Bravo Basins respectively.

The AH-DMP provides a "Proposed Management Plan" for the Amole Arroyo Basin, the South Powerline Channel Basin, the Secate Blanco Basin and the Rio Bravo Basin. These are attached as Appendices 11 through 14. The RBSDP provides drainage recommendations that are attached in Appendix 9.

AMOLE ARROYO BASIN

The Amole Arroyo sections proposed by the AH-DMP [see AH-DMP paragraph 2, pages 32 and 33, attached in Appendix 11] within the RBSDP are the:

1) Upper Reach Channel [Amole Arroyo upstream of confluence with the Snow Vista Channel]
2) Mid-Reach Composite Channel [Amole Arroyo from the confluence with the Snow Vista Channel to approximately the Secate Blanco]
3) Lower Reach [Amole Arroyo from the confluence with the Secate Blanco to the existing concrete channel transition at the inlet to Amole Dam]

Upper Reach Channel [Amole Arroyo upstream of confluence with the Snow Vista Channel]

1) There has been some discussion of the proposed alignment of this channel.
   a) The Drainage Masterplan Exhibit shows the alignment proposed by the RBSDP-MDP.
   b) The RBSDP proposes the alignment shown in the RBSDP-MDP [see Illustration 13 attached in Appendix 9].
   c) Alternative 2 of the AH-DMP [figure within the AH-DMP that is attached as part of Appendix 11] shows the same alignment for the Upper Reach of the Amole Arroyo, as is proposed in the RBSDP-MDP. As noted in AH-DMP paragraph 1.g (4) on page 32 [see Appendix 11] "Alternative 2 and Alternative 5 illustrate the proposed alternative".
   d) Therefore the RBSDP-MDP proposed alignment is per the AH-DMP.

2) Per AH-DMP paragraph 2.b on page 32 [see Appendix 11], "Channel treatments to consider include meandering soil cement, concrete and riprap channel sections, silt traps, natural appearing drop structures, etc. A conceptual section of the low flow channel with recreation amenities is shown on Figure III-2 and on the Alternative drawings."
   a) The developed condition AHYMO model in the RBSDP-MDP assumes the same trapezoidal section used in the AH-DMP, per Figure III-2 [see Appendix 11].
3) The RBSDP also proposes the ROW be used for an Amole Arroyo Urban Trail [see Illustration 10 in Appendix 9]. On page 33, the RBSDP proposes "an alignment of the Amole Arroyo, semi-natural conditions between the existing power line detention facility and the Snow Vista Channel" [see Appendix 9].
4) The recommendations of the RBSDP-MDP are consistent with these recommendations of the RBSDP.

Mid-Reach Composite Channel [Amole Arroyo from the confluence with the Snow Vista Channel to approximately the Secate Blanco]

1) There has been some discussion of the proposed alignment of this channel.
   a) The Drainage Masterplan Exhibit shows the alignment proposed by the RBSDP-MDP.
   b) The RBSDP proposes the alignment shown in the RBSDP-MDP [see Illustration 13 attached in Appendix 9].
   c) Alternative 2 of the AH-DMP [figure within the AH-DMP that is attached as part of Appendix 11] shows the same alignment for the Upper Reach of the Amole Arroyo, as is proposed in the RBSDP-MDP. As noted in AH-DMP paragraph 1.g (4) on page 32 [see Appendix 11] "Alternative 2 and Alternative 5 illustrate the proposed alternative".
   d) Discussion of this channel in paragraph 2.b on page 33 of the AH-DMP [see Appendix 11] states "The proposed alignment is . . . along the RBSP alignment or other alignment compatible with development".
   e) Therefore the RBSDP-MDP proposed alignment is per the AH-DMP and the RBSDP.
2) The Snow Vista Channel starts at the confluence of the Upper Reach and Mid-Reach portions of the Amole Arroyo. Since the Upper Reach is being located per AH-DMP Alternative 2 [see Appendix 11], a portion of what was the Snow Vista Channel is now the Mid-Reach Composite Channel portion of the Amole Arroyo.
   a) The remaining portion of the Snow Vista Channel, upstream of its confluence with the Amole Arroyo, is not significantly impacted by the RBSDP-DMP.
   b) The "Hydrology" section below provides a comparison of the AH-DMP and the RBSDP-MDP flows in the Snow Vista Channel at the confluence with the Amole Arroyo.
3) Relative to the proposed channel section.
   a) The AH-DMP states in paragraph 2.b [see Appendix 11] "Construct composite channel from Snow Vista confluence to approximately Secate Blanco", and "See conceptual section . . . on Figure III-2".
   b) The RBSDP states [see Appendix 9] " . . . for the Amole Arroyo power line portion. This treatment is envisioned to be earth toned concrete or soil cement and designed for high-velocity conditions."

c) During analysis for the RBSDP-MDP, it was found that the AH-DMP AHYMO model for developed conditions did not match the recommendations of the AH-DMP. Leedshill-Herkenhoff, Inc. provided a memo, which is attached as Appendix 15. Point 2 of this memo addresses the channel section of the Mid-Reach Composite Channel.
d) The RBSDP-MDP developed condition AHYMO model was corrected to the proposed composite section.
e) Therefore the RBSDP-MDP proposed channel section is per the AH-DMP and the RBSDP.

Lower Reach [Amole Arroyo from the confluence with the Secate Blanco to the existing concrete channel transition at the inlet to Amole Dam]

1) Relative to channel section, the AH-DMP states in paragraph 2.b [see Appendix 15] "Construct a high flow soil cement or concrete channel . . . ." and "This channel section is shown schematically . . . on Figure III-2".
2) The Lower Reach is outside the limits of the RBSDP.
3) The RBSDP-MDP proposed channel section is per the AH-DMP.

SOUTH POWERLINE CHANNEL BASIN

1) As described in paragraph 2a, page 53, and Figure III-7 [see Appendix 12], the AH-DMP proposes the South Powerline Channel/Detention Project, a system of detention/sedimentation ponds, berms and conveyance system. This system will "capture the sediment generated from the escarpment" and "attenuate the peak runoff thereby reducing the size of conveyance systems required."
2) The RBSDP acknowledges these proposed improvements on page 33 [see Appendix 9].
3) As discussed below in the "Hydrology" section, the South Powerline Channel/Detention Project is assumed to be in place under ultimate developed conditions, but not to be in place during the interim period after full development of the RBSDP and before any development occurs upstream of the RBSDP area.
   a) Due to this interim period assumption, some temporary ponding is proposed by the RBSDP-MDP west of the RBSDP [see Drainage Masterplan Exhibit].
   b) An acceptable alternate, not within the scope of the RBSDP-MDP, may be construction of some portions of the South Powerline Channel/Detention Project, to eliminate the need for this temporary ponding. Evaluation of this alternative is not necessary at this time, and can better be accomplished when development of this portion of the RBSDP is more imminent.
4) The assumptions of the RBSDP-MDP are consistent with the AH-DMP.

SECATE BLANCO BASIN

The Secate Blanco channels/conveyances proposed by the AH-DMP within the RBSDP are:

1) Secate Blanco Diversion Channel Project SB1
2) South Secate Blanco Arroyo Project SB2
3) Secate Blanco Avulsion Conveyance Project SB3

Secate Blanco Diversion Channel Project SB1

1) The AH-DMP proposes in paragraph 2.a, page 59 [see Appendix 13] to "Stabilize the channel to convey the "clean" water runoff to the convergence with the Amole Arroyo. See proposed channel section on Figure III-8."
2) Page 33 of the RBSDP [see Appendix 9] states "The Secate Blanco Arroyo running west to east within the Sector Plan is envisioned to be an improved channel with an adjacent trail." This is also reflected on Illustrations 10 and 13 of the RBSDP.
3) The RBSDP-MDP proposes a channel section consistent with the recommendations of the AH-DMP and the RBSDP. However, a portion will have a higher flow rate than currently proposed by the AH-DMP. Therefore, the channel section for this portion will be steeper or deeper or wider. See discussion below for the Secate Blanco Avulsion Conveyance Project SB3.

South Secate Blanco Arroyo Project SB2

1) The AH-DMP states in paragraph 2.b, page 59 [see Appendix 13] "Conveys the runoff generated . . . ." and "This arroyo, shown on Figure III-8 . . . ." and "This arroyo could be lined, placed in a storm drain, or otherwise stabilized, depending on future development. No recommendations are made about channel improvements as a result of this DMP."
2) Page 33 of the RBSDP [see Appendix 9] states "The Secate Blanco Arroyo running west to east within the Sector Plan is envisioned to be an improved channel with an adjacent trail. This is also reflected on Illustrations 10 and 13 of the RBSDP.
3) The RBSDP-MDP proposes a channel section consistent with the recommendations of the AH-DMP and the RBSDP.

Secate Blanco Avulsion Conveyance Project SB3

1) The AH-DMP states in paragraph 2.c, page 59 [see Appendix 13] "The existing drainage divide just upstream from the Diversion Channel is the result of an avulsion down an unimproved road" and "This conveyance is shown on Figure III-8. This conveyance could be street flow, storm drain or channel flow or a combination depending on future development."
2) The RBSDP does not contain any provisions for the Secate Blanco Avulsion Conveyance Project SB3.
3) The RBSDP-MDP proposes to collect the flow proposed for the Secate Blanco Avulsion Conveyance Project SB3 in storm drains E2 and D2.
   a) As shown on the RBSDP-MDP Drainage Masterplan Exhibit, storm drain D2 drains through storm drain D3 to an area which Illustration 10 of the RBSDP [see Appendix 9] designates as "Amole Arroyo Open Space/Natural Trail". The RBSDP-MDP models this as an open channel, consistent with the RBSDP recommendations for the Secate Blanco Arroyo.
   b) Storm drain E2 is proposed to drain into the Secate Blanco Diversion Channel. Because the AH-DMP proposes improving the channel via Project SB1, by inspection it is determined that the additional capacity required can be provided, by increasing the capacity of Project SB1, at less cost than extending storm drain E2 to D3.

4) The Secate Blanco Avulsion Conveyance Project SB3 proposed by the AH-DMP outfalls to the Amole Basin, the same outfall proposed by the RBSDP-DMP.
5) The recommendations of the RBSDP-MDP are in accordance with the stated goals of the AH-DMP and represent the least cost means of providing drainage.

RIO BRAVO BASIN

1) Paragraph 2.b, page 65 of the AH-DMP [see Appendix 14] states "Construction of the Rio Bravo Channel is programmed to be constructed concurrently with the Rio Bravo Boulevard Extension. Therefore, this facility is included in the DMP solution."
2) This facility is recognized on page 33 of the RBSDP [see Appendix 9].
3) The Rio Bravo channel is included in the RBSDP-MDP per the AH-DMP and the RBSDP-MDP.
4) The south limit of the Rio Bravo Basin was adjusted to be consistent with the Borrega Basin work being done by Wilson & Co.

TOPO MAPPING

CSC provided electronic topo mapping on dated 8/22/98.

HYDROLOGY

Hydrological analyses are included in Appendices 4 and 5 for two conditions:

1) Developed condition. This assumes full development of the RBSDP area per the RBSDP, full development of the upstream areas per the AH-DMP, and construction of all relevant facilities proposed by the AH-DMP.
2) Existing condition. This model assumes existing development and facilities upstream of the RBSDP area and provides flow rates that must be handled at the upstream edge of the RBSDP-MDP. In some cases, the existing condition model results in greater flows at the upstream edge of the RBSDP-MDP.

Hydrology is based on the AH-DMP. Electronic copies of the AH-DMP AHYMO input files were obtained from AMAFCA and were utilized in the subject [RBSDP-MDP] study. The offsite areas flowing through the RBSDP were unchanged with the exception of AH-DMP basins that partly lay within the RBSDP area. These basins were truncated to the remaining area upstream of the RBSDP, the times of concentration were recomputed [see Appendix 6] and the land treatment factors were unchanged. The truncated basins are shown on the Drainage Masterplan Exhibit and worksheets are attached in Appendix 8.

AHYMO analysis was prepared for the 100-year, 24-hour storm. Summary reports and input data are contained in Appendices 4 and 5. Drainage basins are shown in Drainage Masterplan Exhibit. Land treatments and times of concentration within the RBSDP were computed in accordance with Section 22.2 of the City DPM. Land treatment values for the various land uses within the RBSDP area are shown in Appendix 3. Actual values for each basin are shown in the

input data in Appendix 5. Calculations for the times of concentration are provided in Appendix 6.

The primary concern of this study is the ultimate developed condition of the full study area, and the upstream area, complete with all improvements proposed by the AH-DMP. Utilizing the AHYMO analysis from the AH-DMP, offsite flows were also developed for the undeveloped condition prior to proposed AH-DMP improvements, i.e., the South Powerline Diversion Channel Detention facilities. These flows are shown on the Drainage Masterplan Exhibit. Most basins have less flow under existing conditions than will be handled under developed conditions. Since the proposed facilities within the RBSDP are sized for developed conditions, they will be sufficient for the interim condition prior to full development upstream of the RBSDP. As shown on the Drainage Masterplan Exhibit, existing flows from Secate Blanco Basins 60112 and 60117 are greater than the developed flows. Therefore flow attenuation must be provided. One alternative, as shown on the Drainage Masterplan Exhibit, is for temporary ponding to be provided. Sediment control will be necessary for the flows from the undeveloped areas. This is outside the scope of the subject analysis [RBSDP-MDP] and will be addressed during the design of the future subdivisions. As shown on the Drainage Masterplan Exhibit, the flow from the South Powerline Basin B-4 is greater under the existing [undeveloped] condition. Per the RBW-Avid, the Rio Bravo Channel is designed for the existing [undeveloped] condition.

The AH-DMP utilized a 6% bulking factor for developed conditions. The 6% bulking factor was retained in the RBSDP-MDP for the portions within the AH-DMP, i.e., west of the Amole/Snow Vista Arroyo. For the area east of the Amole Arroyo and south of Gibson, a 2% bulking factor is used for developed conditions. For off-site flows impacting the RBSDP area, the AH-DMP model and all supporting assumptions were unchanged.

Free discharge is proposed for the RBSDP area, in accordance with the AH-DMP.

The following is a comparison of the flows proposed by the RBSDP-MDP versus those from the AH-DMP. Both models assume fully developed conditions with the AH-DMP improvements in place. See the Drainage Masterplan Exhibit for the location of the Amole-Hubbell analysis points [A-H AP]. The following comments are offered on the differences.

1) General. Flows in the RBSDP-MDP were mostly routed through pipes versus overland flow used in some basins of the AH-DMP. When this assumption was questioned, Leedshill-Herkenhoff provided a memo that is attached as Appendix 15.
2) A-H AP 3.1. The Amole Arroyo Mid-Reach Composite Channel is modeled in the RBSDP-MDP in accordance with the section proposed in the AH-DMP, that is a "composite channel consists of a low flow soil cement or tinted concrete "naturalistic" channel capable to conveying the 10-year runoff without overtopping. Less frequent higher flows would be conveyed in overbank areas as shallow low velocity flow. See conceptual section . . . on Figure III-2." See page 33 in Appendix 11 for the above reference. As noted in Appendix 15, this section, proposed by the AH-DMP, was not used in the developed condition AHYMO model of the AH-DMP.

3) General. Land treatments for developed conditions were utilized for both the RBSDP-MDP and the AH-DMP. The RBSDP uses more detailed information based on the specific recommendations of the current RBSDP.
4) A-H AP 61 and 62. As discussed above, some flow proposed for the Secate Blanco Avulsion Conveyance Project SB3 is routed through the Secate Blanco Diversion Channel SB1.

Also, some flow rates in the AH-DMP report figures did not match the flow rates in the AHYMO output reports. Leedshill-Herkenhoff provided clarification attached in Appendix 15 and the clarified flow is used below for A-H Analysis Point 3.1.

Comparison of RBSDP-MDP to AH-DMP

Location	RBSDP-MDP Q_{100} (cfs)	RBSDP-MDP Runoff Volume (AF)	AH-DMP Q_{100} (cfs)	AH-DMP Runoff Volume (AF)
A-H AP 2.2	781	582	693	580
A-H AP 3.1	3282	798	3310	814
A-H AP 43	798	156	658	141.6
A-H AP 61	1008	52	369	19
A-H AP 62	1217	64	1183	73.2
A-M AP 24	2041	181	2063	183

HYDRAULICS

Non-pressure, or minimal pressure, conditions are assumed for sizing of pipes in this report. Future designers will have the option of considering pressure flows for reduction of required pipe sizes. Assumed pipe slopes and resultant pipe sizes are provided in Appendix 2. As noted above, no street flow is assumed in this analysis but street flow should be considered when these storm drains are designed, possibly resulting in smaller pipes.

FEMA FLOOD PLAINS

FEMA floodplains impact a portion of the study area. These flood plains are shown on the Drainage Masterplan Exhibit. Flood plains will be removed as future development provides the improvements proposed in the subject report [RBSDP-MDP] and LOMR's are submitted to FEMA.

SUMMARY

This report presents a plan for storm water control facilities for the Rio Bravo Sector Development Plan. The recommendations made in this report are of a conceptual nature. Final, constructed facilities must be designed on detailed tributary drainage areas and final grades for streets, storm sewers and drainage channels. Consequently, the runoff rates calculated and drainage improvements proposed must be considered as a conceptual guide for future development.

APPENDICES

APPENDIX 1

MEETING MINUTES – COA – 11/5/99

M E M O R A N D U M

To: File

From: Mark Holstad

Date: November 8, 1999

Subject: ***RBSDP DMP – Meeting – 11/5/1999***

Attendees:

Bo Johnson	Bokay
Fred Aguirre	COA
Susan Calongne	COA
Mark Holstad	URSGWC

Subject:

Rio Bravo Sector Development Plan - Drainage Masterplan

Discussion:

1) Bo overviewed project area and status of SDP.
2) Agreed that now is the time to update the drainage masterplan.
3) Discussed previous studies in the area.
   a) Recent Amole-Hubbell DMP by LH for AMAFCA.
      i) Susan and Fred do not have a copy. Hogan was somewhat involved for the City.
      ii) Mark and Susan to meet with Don Dixon to clarify criteria and to coordinate with AMAFCA.
   b) Boyle study for Vista Del Sol Mobile Home Park, July 1986.
   c) Plate 6 of the RBSDP is the Drainage Masterplan done by IA. Dated 7/16/87 and 1/4/88. [During the meeting, no one knew where a copy of the associated report could be found. After the meeting, Susan and Mark found it in the Goodwin compilation.]
   d) Goodwin has done a study primarily involving the Parcels 2, 3 and 4, in which they compiled all the previous studies. [Albuquerque Reprographics is picking this up and making copies.]
   e) A storm drain is being extended west in Blake from the Amole Channel. Talk to Susan for details.

4) Discussed criteria for study.
   a) Update Plate 6 from the previous SDP.
      i) Size pipe systems to serve parcels defined by SDP.
   b) Show street layout per revised SDP under process of approval by City Council
   c) Find contours for exhibit. Can be old topo. Possibly 5' intervals.
   d) AHYMO.
   e) Meet criteria of Amole-Hubbell DMP. Meet downstream restrictions for portion draining through existing facilities, e.g., the Vista Del Sol Mobile Home Park.
   f) Street capacities can be ignored at this point. Pipe sizes will be adjusted by the future engineer designing that portion of the system.

APPENDIX 2

PIPE SEGMENT TABLE

Rio Bravo Sector
Development Plan

Pipe Segment Table*

Location	Diameter, in.	Slope, %	Q_{100} (cfs)
A1	48	1.9	175
A2	48	2.7	242
A3	54	3.0	348
A4	66	2.2	461
B1	36	3.6	88
B2	42	3.6	177
B3	36	2.0	94
C1	48	2.5	180
C2	30	1.7	48
C3	66	1.6	338
C4	48	2.3	134
D1	60	3.6	481
D2	72	3.0	622
D3	108	0.7	918
D4	54	2.5	291
D5	36	1.7	74
D6	42	1.7	128.96
D7	48	0.5	83.67
E1	66	2.8	563
E2	72	2.5	652
E3	84	1.5	652
E5	72	0.5	254
E6	72	3.2	254

E7	36	1.7	86
F1	72	0.5	253
G1	36	1.5	60
H1	48	0.5	97

* Assumes fully developed conditions with DMP improvements in place.

APPENDIX 3

LAND TREATMENT VALUES

Rio Bravo Sector
Development Plan

Land Treatment

Land Use	A	B	C	D
Residential	0	25	20	55
Commercial	0	0	10	90
Parks	0	93	0	7
Office	0	10	0	90
Apartments/ etc.	0	0	30	70
Mixed Use	0	15	5	80

Notes:

1) Above land treatments used within the RBSDP.
2) Upstream offsite land treatments per the AH-DMP.

URS Greiner Woodward Clyde

Page ____ of ____

Job RBSDP | Project No. E30000149601 | Sheet 1 of 3

Description Land Treatment Factors | Computed by MSH | Date 2-27-00

Checked by ____ | Date ____

Reference

Problem

Determine Land Treatment factors for various proposed land uses in the RBSDP.

Assumption

Use Table A-5 from DPW Chg. 22 to determine LT-D. Make reasonable assumptions for remainder.

Analysis

Residential

If N = 6 DU/Ac

LT-D = 7 * √((6*6)+(5*6)) = 56.9 %

Per discussion with AMAFCA,

assume

LT-D =	55 %
LT-C =	20 %
LT-B =	35 %.

Commercial

Per Table A-5 ⇒ LT-D = 90 %

assume

LT-D =	90 %
LT-C =	10 %

Parks

Per Table A-5 ⇒ LT-D = 7 %

assume

LT-D =	7 %
LT-C =	0 %
LT-B =	93 %

URS Greiner Woodward Clyde

Job RBSDP | Project No. E30001/4960/ | Page ___ of ___

Description Land Treatment Factors | Computed by MH | Date 2-27-00

Checked by ___ | Date ___

Reference

Office

Assume office space falls under criteria of commercial, see above.

assume

LT-D = 90%
LT-C = 0%
LT-B = 10%

Apartments, Etc

Use attached multiple unit residential per Table A-5 ⇒ LT-D = 70%

assume

LT-D = 70%
LT-C = 30%

Mixed Use

Assume consistent with Heavy Industrial Per Table A-5 ⇒ LT-D = 80%

assume

LT-D = 80%
LT-C = 5%
LT-B = 15%

TABLE A-5. PERCENT TREATMENT D (Impervious)	
Land Use	**Percent**
Commercial*	90
Single Family Residential N=units/acre, N≤6	$7*\sqrt{((N*N)+(5*N))}$ (a-4)
Multiple Unit Residential Detached* Attached*	 60 70
Industrial Light* Heavy*	 70 80
Parks, Cemeteries	7
Playgrounds	13
Schools	50
Collector & Arterial Streets	90
*Includes local streets	

TABLE A-5 does not provide areal percentages for land treatments A, B and C. Use of TABLE A-5 will require additional analysis to determine the appropriate areal percentages of these land treatments.

Backyard retention ponds, and other small on-site ponding, may have the effect of reducing runoff from impervious areas. Where it can be clearly demonstrated that backyard and small on-site retention ponding currently exist, impervious and/or pervious areas which drain to such ponds ~~may~~ can be given credit towards their determination of peak rates of runoff and runoff volumes from the development. ~~considered to be in land treatment A. Application of backyard ponding is not normally applicable to more than 35 percent of the area in land treatment D (impervious). Allowance for backyard ponding will not be considered for new developments and future development.~~

A.4 ABSTRACTIONS

Initial abstraction is the precipitation depth which must be exceeded before direct runoff begins. Initial abstraction may be intercepted by vegetation, retained in surface depressions, or absorbed on the watershed surface. Initial abstractions are shown in TABLE A-6.

APPENDIX 4

AHYMO SUMMARY REPORTS

RBSDP MDP
AHYMO SUMMARY REPORT
DEVELOPED CONDITIONS

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =03/04/2000
INPUT FILE = P:\DRAINAGE\DMPAHYMO\SBAMOLE2.DAT USER NO.= AHYMO-S-9702c3URSGrnr-AH

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 100 YEAR 24HR STORM DEVELOPED CONDITION											
RAINFALL TYPE= 2										RAIN24=	2.660
*S OFF SITE BASIN DESIGNATIONS CORROSPOND TO DESIGNATIONS FOUND IN											
*S AMOLE-HUBBELL DRAINAGE MASTER PLAN-FINAL FACILITIES REPORT											
*S VOLUME 1 PREPARED FOR AMAFCA BY LEEDSHILL-HERKENHOFF INC. DATED											
*S JULY 22 1999.											
*S											
*S											
*S BEGIN AMOLE BASIN											
*S											
*S											
RECALL HYD	WG_DMP.HYD	-	5	5.15730	73.47	170.999	.62169	7.050	.022		
ROUTE	WG101.5	5	11	5.15730	73.47	170.585	.62018	7.400	.022		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	102.00	-	2	.11190	218.60	9.283	1.55544	1.500	3.052	PER IMP=	47.00
ADD HYD	102.10	11& 2	3	5.26920	252.85	179.868	.64005	1.500	.075		
RECALL HYD	PL_DMP1.HYD	-	11	1.20470	19.34	42.699	.66457	29.900	.025		
ADD HYD	102.10	11& 3	3	6.47390	255.01	222.568	.64461	1.500	.062		
ROUTE	102.50	3	12	6.47390	255.30	222.399	.64412	1.550	.062		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	00103A	-	2	.07170	162.04	6.475	1.69326	1.500	3.531	PER IMP=	49.00
ROUTE	00103A.5	2	11	.07170	100.85	6.475	1.69325	1.600	2.198		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	00103B	-	2	.12070	202.77	10.858	1.68669	1.600	2.625	PER IMP=	49.00
ADD HYD	00103B.1	11& 2	3	.19240	303.62	17.333	1.68913	1.600	2.466		
ADD HYD	00103B.2	12& 3	4	6.66630	542.07	239.732	.67428	1.550	.127		
ROUTE	00103B.5	4	11	6.66630	539.60	239.549	.67377	1.550	.126		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	104.00	-	2	.01830	40.11	1.617	1.65724	1.500	3.424	PER IMP=	49.00
ADD HYD	104.10	11& 2	3	6.68460	575.41	241.166	.67646	1.550	.134		
ROUTE	104.50	3	11	6.68460	580.27	240.795	.67542	1.600	.136		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	105.00	-	2	.07390	156.62	6.446	1.63539	1.500	3.312	PER IMP=	49.00
ADD HYD	105.10	11& 2	3	6.75850	699.46	247.241	.68592	1.550	.162		
ROUTE	105.50	3	11	6.75850	702.71	247.095	.68551	1.600	.162		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	39b	-	3	.01330	31.08	1.274	1.79578	1.500	3.651	PER IMP=	55.00
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	38.00	-	4	.00680	10.06	.304	.83699	1.500	2.312	PER IMP=	7.00
ADD HYD	38.10	4& 3	3	.02010	41.14	1.577	1.47138	1.500	3.198		
ADD HYD	38.10	11& 3	3	6.77860	733.42	248.672	.68784	1.550	.169		

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	38.20	3	11	6.77860	745.22	248.418	.68714	1.600	.172	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	41b	-	4	.01430	33.41	1.370	1.79578	1.500	3.651	PER IMP= 55.00
ADD HYD	41.10	11& 4	3	6.79290	768.46	249.788	.68947	1.600	.177	
ROUTE	41.10	3	11	6.79290	781.70	249.534	.68877	1.600	.180	
RECALL HYD	SV_DMP2.HYD	-	2	1.81950	2040.91	181.396	1.86929	1.600	1.753	
ADD HYD	AMOL_SV.1	2&11	2	8.61240	2822.61	430.931	.93818	1.600	.512	
ROUTE	AMOL_SV.2	2	15	8.61240	2773.95	430.368	.93695	1.650	.503	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	107.00	-	2	.08784	175.82	8.086	1.72607	1.550	3.127	PER IMP= 52.00
ROUTE	107.10	2	10	.08784	177.36	8.086	1.72607	1.550	3.155	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	37.00	-	2	.03010	70.32	2.883	1.79578	1.500	3.650	PER IMP= 55.00
ADD HYD	37.10	10& 2	2	.11794	239.77	10.969	1.74385	1.550	3.177	

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	37.10	2	10	.11794	242.00	10.969	1.74386	1.550	3.206	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	41a	-	2	.01870	43.69	1.791	1.79578	1.500	3.651	PER IMP= 55.00
ROUTE	41.10	2	11	.01870	42.54	1.791	1.79580	1.500	3.554	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	36.00	-	2	.02520	63.77	2.831	2.10624	1.500	3.954	PER IMP= 75.00
ADD HYD	37.10	11& 2	2	.04390	106.31	4.622	1.97398	1.500	3.784	
ADD HYD	37.10	10& 2	2	.16184	341.36	15.591	1.80628	1.500	3.296	
ROUTE	37.10	2	10	.16184	348.43	15.591	1.80628	1.550	3.364	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	35.00	-	2	.04580	126.18	5.829	2.38622	1.500	4.305	PER IMP= 90.00
ADD HYD	35.10	10& 2	2	.20764	459.24	21.420	1.93420	1.500	3.456	
ROUTE	35.10	2	10	.20764	461.20	21.420	1.93420	1.550	3.471	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	1b	-	2	.02270	54.51	2.889	2.38622	1.550	3.752	PER IMP= 90.00
ADD HYD	1b.1	15& 2	15	8.63510	2815.50	433.257	.94076	1.650	.509	
ADD HYD	AMOL_SV.21	10&15	2	8.84274	3126.36	454.677	.96409	1.650	.552	
ROUTE	AMOL_SV.3	2	11	8.84274	3142.43	454.362	.96342	1.650	.555	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	5b	-	2	.00490	11.46	.469	1.79578	1.500	3.654	PER IMP= 55.00
ADD HYD	37.10	11& 2	2	8.84764	3148.69	454.832	.96388	1.650	.556	
ROUTE	AMOL_SV.4	2	16	8.84764	3108.92	454.518	.96322	1.650	.549	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	33.00	-	2	.03900	91.10	3.735	1.79578	1.500	3.650	PER IMP= 55.00
ROUTE	33.10	2	10	.03900	88.75	3.735	1.79579	1.500	3.556	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	34.00	-	2	.04010	93.67	3.841	1.79578	1.500	3.650	PER IMP= 55.00
ROUTE	34.10	2	11	.04010	93.65	3.841	1.79579	1.500	3.649	
ADD HYD	37.10	11&10	2	.07910	182.40	7.576	1.79577	1.500	3.603	
ROUTE	33.20	2	10	.07910	176.84	7.576	1.79578	1.500	3.493	
ADD HYD	AMOL_SV.5	16&10	2	8.92674	3222.29	462.094	.97060	1.650	.564	

SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	5A	-	3	.03430	80.13	3.285	1.79578	1.500	3.650	PER IMP= 55.00
ADD HYD	AMOL_SV5.1	2& 3	2	8.96104	3266.05	465.379	.97375	1.650	.569	
ROUTE	AMOL_SV.6	2	15	8.96104	3262.46	464.948	.97285	1.700	.569	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	9a	-	3	.00245	5.65	.235	1.79578	1.500	3.606	PER IMP= 55.00
ADD HYD	9a	15& 3	25	8.96349	3265.06	465.182	.97308	1.700	.569	
ROUTE	AMOL_SV.7	25	26	8.96349	3281.69	465.000	.97270	1.700	.572	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	5c	-	2	.02810	72.16	3.441	2.29618	1.500	4.013	PER IMP= 90.00
ROUTE	11.10	2	10	.02810	71.66	3.441	2.29619	1.550	3.985	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	6a	-	2	.02660	67.48	3.023	2.13116	1.500	3.964	PER IMP= 80.00
ADD HYD	6a.1	2&10	10	.05470	136.97	6.465	2.21592	1.500	3.912	
ROUTE	6a.2	10	11	.05470	134.38	6.465	2.21593	1.500	3.838	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	7a	-	2	.02140	48.11	1.972	1.72801	1.500	3.513	PER IMP= 55.00
ADD HYD	7a.1	2&11	11	.07610	182.49	8.437	2.07871	1.500	3.747	
ROUTE	7a.2	11	12	.07610	180.18	8.437	2.07872	1.550	3.700	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	7b	-	2	.01520	32.71	1.401	1.72801	1.500	3.363	PER IMP= 55.00
ADD HYD	7b.1	2&12	12	.09130	210.87	9.838	2.02032	1.550	3.609	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	5d	-	2	.00830	11.82	.357	.80541	1.500	2.224	PER IMP= 7.00
ROUTE	5d.1	2	10	.00830	11.25	.357	.80547	1.550	2.118	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	6b	-	2	.01520	38.56	1.728	2.13116	1.500	3.964	PER IMP= 80.00
ADD HYD	6b.1	2&10	10	.02350	48.28	2.084	1.66290	1.500	3.210	

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 = 3 NOTATION
ROUTE	6b.1	10	11	.02350	47.10	2.084	1.66293	1.500	3.132	
ADD HYD	UNSERFLOW	11&12	10	.11480	257.92	11.922	1.94716	1.550	3.510	
ROUTE	UNSERFLOW.1	10	45	.11480	260.15	11.922	1.94716	1.550	3.541	
SEDIMENT BULK										PK BF = 1.02
COMPUTE NM HYD	9b	-	2	.03477	86.58	3.952	2.13116	1.500	3.891	PER IMP= 80.00
ADD HYD	UNSERFLOW.2	45& 2	45	.14957	338.44	15.874	1.98993	1.550	3.536	
*S SACATE BLANCO BASIN										
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	D60104	-	2	.03910	82.00	3.151	1.51117	1.500	3.277	PER IMP= 40.00
ROUTE	D60104.5	2	11	.03910	62.36	3.151	1.51119	1.600	2.492	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	D60105	-	2	.09000	183.34	8.481	1.76691	1.550	3.183	PER IMP= 54.00
ADD HYD		11& 2	2	.12910	243.90	11.632	1.68945	1.550	2.952	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	D60106	-	3	.03640	82.27	3.287	1.69326	1.500	3.532	PER IMP= 49.00
ROUTE	D60106.5	3	11	.03640	58.94	3.287	1.69327	1.600	2.530	
ADD HYD		11& 2	2	.16550	300.16	14.920	1.69029	1.550	2.834	

ROUTE		2	10	.16550	291.36	14.920	1.69030	1.600	2.751	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	32c	-	3	.03483	81.36	3.336	1.79577	1.500	3.650	PER IMP= 55.00
ROUTE	32c.1	3	11	.03483	79.27	3.336	1.79579	1.500	3.556	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	32b	-	2	.02319	49.69	2.221	1.79578	1.500	3.348	PER IMP= 55.00
ADD HYD	32b.1	2&11	11	.05802	128.96	5.557	1.79577	1.500	3.473	
ROUTE	32b.2	11	12	.05802	127.46	5.557	1.79578	1.550	3.432	
ADD HYD	32.10	10&12	10	.22352	418.69	20.476	1.71767	1.550	2.927	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	32a	-	2	.03602	69.85	3.450	1.79578	1.550	3.030	PER IMP= 55.00
ADD HYD	32a.1	2&10	10	.25954	488.54	23.926	1.72851	1.550	2.941	
ROUTE	32a.2	10	11	.25954	480.68	23.926	1.72851	1.600	2.894	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	31b	-	2	.03475	75.56	3.328	1.79578	1.500	3.397	PER IMP= 55.00
ROUTE	31b.1	2	10	.03475	73.51	3.328	1.79579	1.550	3.305	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	31a	-	2	.03742	83.67	3.584	1.79578	1.500	3.494	PER IMP= 55.00
ADD HYD	31a.1	2&11	11	.29696	553.46	27.510	1.73699	1.550	2.912	
ADD HYD	31b.2	10&11	11	.33171	626.98	30.838	1.74314	1.550	2.953	
ROUTE	31b.1	11	12	.33171	622.06	30.838	1.74315	1.550	2.930	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	13.00	-	2	.06000	129.82	5.746	1.79578	1.500	3.381	PER IMP= 55.00
ADD HYD	13.10	2&12	12	.39171	747.87	36.585	1.75120	1.550	2.983	
ROUTE	13.20	12	13	.39171	744.99	36.585	1.75121	1.550	2.972	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	11.00	-	2	.03350	82.18	3.596	2.01291	1.500	3.833	PER IMP= 70.00
ROUTE	11.10	2	10	.03350	80.56	3.596	2.01293	1.500	3.757	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	10.00	-	2	.02600	60.74	2.490	1.79578	1.500	3.650	PER IMP= 55.00
ADD HYD	10.10	10& 2	10	.05950	141.30	6.087	1.91802	1.500	3.711	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	12.00	-	2	.02070	48.36	1.983	1.79577	1.500	3.650	PER IMP= 55.00
ADD HYD	11.40	2&10	10	.08020	189.66	8.069	1.88647	1.500	3.695	
ADD HYD	13.30	13&10	13	.47191	918.19	44.654	1.77419	1.550	3.040	
ROUTE	13.40	13	14	.47191	901.59	44.654	1.77419	1.600	2.985	
ADD HYD	AMOL_SV.8	26&14	26	9.43540	3972.72	509.653	1.01278	1.700	.658	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	D60107A	-	3	.01890	42.72	1.707	1.69326	1.500	3.532	PER IMP= 49.00
ROUTE	D60107A.5	3	10	.01890	27.90	1.707	1.69328	1.600	2.307	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	D60107B	-	3	.05648	130.43	5.333	1.77034	1.500	3.608	PER IMP= 54.00

ADD HYD	60107b.1	10& 3	10	.07538	148.20	7.040	1.75101	1.500	3.072	
ROUTE	D60107b.3	10	20	.07538	145.19	7.040	1.75102	1.550	3.009	
SEDIMENT BULK										PK BF = 1.06

COMPUTE NM HYD	D60109	-	19	.05770	130.40	5.211	1.69326	1.500	3.531	PER IMP=	49.00
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	D60111	-	2	.01570	35.49	1.418	1.69326	1.500	3.532	PER IMP=	49.00
ROUTE	D60111.5	2	11	.01570	34.86	1.418	1.69329	1.500	3.470		
ADD HYD	D60111.2	19&11	3	.07340	165.26	6.629	1.69325	1.500	3.518		
ROUTE	D60111.6	3	11	.07340	160.98	6.629	1.69326	1.550	3.427		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD		-	2	.04320	92.77	4.492	1.94985	1.550	3.355	PER IMP=	66.00
ADD HYD		2&11	10	.11660	253.75	11.121	1.78832	1.550	3.400		
ROUTE	D60112.1	10	11	.11660	254.49	11.121	1.78833	1.550	3.410		
ROUTE	D60112.3	11	12	.11660	250.87	11.121	1.78833	1.550	3.362		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	28a	-	2	.02430	56.77	2.327	1.79578	1.500	3.650	PER IMP=	55.00
ROUTE	28a.1	2	10	.02430	54.84	2.327	1.79579	1.550	3.526		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	29a	-	2	.02690	62.84	2.576	1.79578	1.500	3.650	PER IMP=	55.00
ADD HYD	29a.1	10& 2	2	.05120	117.11	4.904	1.79577	1.500	3.574		
ROUTE	11.50	2	10	.05120	114.24	4.904	1.79578	1.550	3.486		
ADD HYD	29a.2	10&12	13	.16780	365.12	16.025	1.79059	1.550	3.400		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	28b	-	2	.02290	53.50	2.193	1.79578	1.500	3.650	PER IMP=	55.00
ROUTE	28b.1	2	11	.02290	52.27	2.193	1.79580	1.500	3.567		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	29b	-	2	.01780	41.59	1.705	1.79577	1.500	3.651	PER IMP=	55.00
ADD HYD	29b.1	2&11	11	.04070	93.86	3.898	1.79577	1.500	3.603		
ADD HYD	29b.2	11&13	13	.20850	453.49	19.923	1.79160	1.550	3.398		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	27b	-	2	.03700	86.43	3.544	1.79578	1.500	3.650	PER IMP=	55.00
ROUTE	27b.1	2	10	.03700	85.63	3.544	1.79579	1.500	3.616		
ADD HYD	27b.2	10&13	13	.24550	534.03	23.466	1.79223	1.550	3.399		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	27a	-	2	.01260	29.44	1.207	1.79578	1.500	3.651	PER IMP=	55.00
ADD HYD	27a.1	2&13	13	.25810	560.17	24.673	1.79240	1.550	3.391		
ROUTE	27a.1	13	14	.25810	562.87	24.673	1.79240	1.550	3.408		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	30.00	-	2	.04670	106.66	4.473	1.79578	1.500	3.569	PER IMP=	55.00
ADD HYD		2&14	10	.30480	660.46	29.146	1.79292	1.550	3.386		
ROUTE		10	11	.30480	652.24	29.146	1.79292	1.550	3.344		
ROUTE		11	21	.30480	639.10	29.146	1.79292	1.600	3.276		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	D60116	-	3	.08370	189.16	7.559	1.69326	1.500	3.531	PER IMP=	49.00
ROUTE	D60116.5	3	11	.08370	189.15	7.559	1.69327	1.500	3.531		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	D60117	-	2	.03236	69.10	3.462	2.00593	1.550	3.336	PER IMP=	69.00
ADD HYD		11& 2	11	.11606	253.53	11.021	1.78043	1.500	3.413		
ROUTE		11	12	.11606	251.55	11.021	1.78044	1.550	3.387		
ROUTE	SACBLANC.1	12	13	.11606	233.26	11.021	1.78044	1.600	3.140		
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	25.00	-	2	.02870	67.04	2.749	1.79578	1.500	3.650	PER IMP=	55.00

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	SACBLANC.2	2&13	13	.14476	292.71	13.769	1.78347	1.550	3.159	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	26.00	-	2	.05080	118.66	4.865	1.79578	1.500	3.650	PER IMP= 55.00
ADD HYD	SACBLANC.3	2&13	13	.19556	398.03	18.635	1.78667	1.550	3.180	
ROUTE	SACBLANC.4	13	14	.19556	379.53	18.635	1.78667	1.600	3.032	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	24.00	-	2	.03010	66.70	2.883	1.79578	1.500	3.462	PER IMP= 55.00
										PAGE = 5
ADD HYD	SACBLANC.5	2&14	14	.22566	431.07	21.518	1.78788	1.600	2.985	
ADD HYD	SACBLANC.5	21&14	13	.53046	1070.18	50.663	1.79078	1.600	3.152	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	14.00	-	2	.03500	77.55	3.352	1.79577	1.500	3.462	PER IMP= 55.00
ADD HYD	SACBLANC.6	13& 2	13	.56546	1132.03	54.015	1.79108	1.550	3.128	
ROUTE	SACBLANC.7	13	14	.56546	1057.00	54.015	1.79109	1.600	2.921	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	15.00	-	2	.04730	92.02	4.530	1.79578	1.550	3.040	PER IMP= 55.00
ADD HYD	SACBLANC.8	14& 2	14	.61276	1144.01	58.545	1.79145	1.600	2.917	
ROUTE	SACBLANC.11	14	15	.61276	1139.40	58.545	1.79145	1.600	2.905	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	16.00	-	2	.05280	97.13	6.237	2.21473	1.650	2.874	PER IMP= 80.00
ROUTE		2	10	.05280	93.97	6.237	2.21474	1.700	2.781	
ADD HYD	SACBLANC.111	10&15	15	.66556	1229.69	64.782	1.82503	1.650	2.887	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	8.00	-	2	.01890	41.10	1.810	1.79577	1.500	3.398	PER IMP= 55.00
ADD HYD	SACBLANC.12	15& 2	15	.68446	1255.80	66.592	1.82422	1.650	2.867	
ROUTE		15	22	.68446	1264.98	66.592	1.82422	1.650	2.888	
ADD HYD	SACBLANC.12	26&22	26	10.11986	5164.06	576.246	1.06766	1.650	.797	
ADD HYD	AMOL_SV.11	26&45	43	10.26943	5394.14	592.119	1.08110	1.650	.821	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	17.00	-	2	.02810	60.21	2.691	1.79578	1.500	3.348	PER IMP= 55.00
ROUTE	17.10	2	23	.02810	60.27	2.691	1.79579	1.550	3.351	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	18.00	-	24	.03580	63.46	4.200	2.19957	1.650	2.770	PER IMP= 80.00
*S										
*S RIO BRAVO BASIN										
*S										
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	A60104	-	2	.11720	246.21	9.446	1.51117	1.500	3.282	PER IMP= 40.00
ROUTE RESERVOIR	POND1.OUT	2	10	.11720	21.88	9.434	1.50935	2.150	.292	AC-FT= 6.311
ROUTE	1.00	10	11	.11720	21.85	9.433	1.50915	2.200	.291	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	A60106	-	1	.04800	108.48	4.335	1.69326	1.500	3.531	PER IMP= 49.00
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	A60107A	-	2	.03130	70.74	2.827	1.69326	1.500	3.532	PER IMP= 49.00
ADD HYD	A60107A.1	1& 2	3	.07930	179.23	7.161	1.69325	1.500	3.531	
ROUTE	6107.50	3	12	.07930	176.29	7.161	1.69326	1.500	3.474	

SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	A60108	-	1	.09240	185.75	6.955	1.41129	1.500	3.141	PER IMP= 35.00
ROUTE	A60108.5	1	10	.09240	184.58	6.955	1.41130	1.500	3.121	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	A60109	-	2	.04140	93.57	3.739	1.69326	1.500	3.531	PER IMP= 49.00
ADD HYD	POND2.A1	11&12	11	.19650	183.08	16.595	1.58345	1.500	1.456	
ADD HYD	POND2.A2	11&10	11	.28890	367.65	23.549	1.52839	1.500	1.988	
ADD HYD	POND2.IN	11& 2	11	.33030	461.22	27.288	1.54905	1.500	2.182	
ROUTE RESERVOIR	POND2.OUT	11	20	.33030	127.26	27.278	1.54845	1.900	.602	AC-FT= 9.103
ROUTE	POND2.ROUTE	20	11	.33030	126.84	27.275	1.54834	1.950	.600	
COMPUTE NM HYD	A60110	-	1	.10460	221.25	8.535	1.52988	1.500	3.305	PER IMP= 41.00
ROUTE	A60110.5	1	10	.10460	214.00	8.535	1.52988	1.550	3.197	
COMPUTE NM HYD	A60111	-	1	.03840	86.79	3.468	1.69326	1.500	3.531	PER IMP= 49.00
ADD HYD	POND3.A1	11&10	11	.43490	259.47	35.810	1.54389	1.550	.932	
ADD HYD	POND3.IN	11& 1	10	.47330	336.78	39.278	1.55601	1.550	1.112	
ROUTE RESERVOIR	POND3.OUT	10	30	.47330	177.80	39.274	1.55586	2.050	.587	AC-FT= 6.435
ROUTE	POND3.ROUTE	30	10	.47330	177.59	39.273	1.55581	2.050	.586	
COMPUTE NM HYD	A60113	-	1	.05800	130.20	5.180	1.67453	1.500	3.507	PER IMP= 48.00
COMPUTE NM HYD	A60116N	-	2	.03810	86.11	3.441	1.69326	1.500	3.531	PER IMP= 49.00
ADD HYD	POND4.A1	10& 1	10	.53130	202.75	44.453	1.56877	1.900	.596	
ADD HYD	POND4.IN	10& 2	10	.56940	265.60	47.893	1.57710	1.500	.729	

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 = 6 NOTATION
ROUTE RESERVOIR	POND4.OUT	10	40	.56940	185.38	47.889	1.57695	2.250	.509	AC-FT= 6.732
ROUTE	POND4.ROUTE	40	10	.56940	185.34	47.887	1.57689	2.250	.509	
COMPUTE NM HYD	A60114	-	1	.21620	443.77	16.704	1.44870	1.500	3.207	PER IMP= 37.00
ROUTE	A60114.5	1	11	.21620	443.78	16.704	1.44870	1.500	3.207	
COMPUTE NM HYD	A60115	-	2	.07640	169.51	6.720	1.64912	1.500	3.467	PER IMP= 47.00
ROUTE	A60115.5	2	12	.07640	166.98	6.720	1.64912	1.500	3.415	
COMPUTE NM HYD	A60116S	-	1	.02440	55.15	2.203	1.69326	1.500	3.532	PER IMP= 49.00
ADD HYD	POND5.A1	10&11	10	.78560	494.84	64.592	1.54161	1.500	.984	
ADD HYD	POND5.A2	10&12	10	.86200	661.82	71.311	1.55114	1.500	1.200	
ADD HYD	POND5.IN	10& 1	10	.88640	716.97	73.515	1.55505	1.500	1.264	
ROUTE RESERVOIR	POND5.OUT	10	50	.88640	383.69	73.509	1.55494	1.750	.676	AC-FT= 10.213
ROUTE	POND5.ROUTE	50	10	.88640	380.96	73.505	1.55485	1.800	.672	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	201.00	-	1	.03080	64.10	2.374	1.44524	1.500	3.252	PER IMP= 34.00
ROUTE	201.50	1	11	.03080	61.22	2.374	1.44525	1.550	3.105	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	203.00	-	1	.09380	195.36	7.230	1.44524	1.500	3.254	PER IMP= 34.00
ADD HYD	203.10	1&11	11	.12460	248.32	9.604	1.44523	1.500	3.114	
ADD HYD	POND6.IN	10&11	11	1.01100	478.03	83.109	1.54134	1.700	.739	
ROUTE RESERVOIR	POND6.OUT	11	60	1.01100	378.83	83.102	1.54121	2.050	.585	AC-FT= 10.129
ROUTE	POND6.ROUTE	60	10	1.01100	378.06	83.099	1.54115	2.050	.584	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	202.00	-	1	.07540	156.95	5.812	1.44524	1.500	3.252	PER IMP= 34.00
ROUTE	202.50	1	11	.07540	128.43	5.812	1.44524	1.550	2.661	

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
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	204.00	-	1	.06410	133.39	4.941	1.44524	1.500	3.251	PER IMP= 34.00
ADD HYD	204.10	1&11	11	.13950	248.56	10.753	1.44523	1.550	2.784	
COMPUTE NM HYD	103.00	-	1	.05400	105.11	3.885	1.34886	1.500	3.041	PER IMP= 32.00
ROUTE	103.50	1	12	.05400	88.06	3.885	1.34887	1.550	2.548	
COMPUTE NM HYD	104.00	-	1	.03930	78.79	2.958	1.41129	1.500	3.133	PER IMP= 35.00
ROUTE	104.50	1	13	.03930	70.78	2.958	1.41130	1.550	2.814	
ADD HYD	104.60	12&13	12	.09330	158.85	6.843	1.37515	1.550	2.660	
COMPUTE NM HYD	105.00	-	1	.12660	285.82	11.433	1.69326	1.500	3.528	PER IMP= 49.00
ADD HYD	POND7.IN	1&12	12	.21990	413.99	18.276	1.55829	1.550	2.942	
ROUTE RESERVOIR	POND7.OUT	12	70	.21990	60.00	18.275	1.55828	2.150	.426	AC-FT= 10.728
ROUTE	7.00	70	12	.21990	60.00	18.275	1.55828	2.150	.426	
ADD HYD	POND8.IN	11&12	11	.35940	294.29	29.028	1.51440	1.550	1.279	
ROUTE RESERVOIR	POND8.OUT	11	80	.35940	57.65	29.027	1.51433	3.000	.251	AC-FT= 9.659
ROUTE	8.00	80	11	.35940	57.65	29.027	1.51432	3.000	.251	
ADD HYD	JUNCTION	11&10	11	1.37040	432.53	112.125	1.53411	2.100	.493	
ROUTE	202.20	11	12	1.37040	429.76	112.119	1.53403	2.150	.490	
CQMPUTE NM HYD	203.00	-	1	.12890	268.75	9.936	1.44524	1.500	3.258	PER IMP= 34.00
ROUTE RESERVOIR	POND9.OUT	1	90	.12890	47.20	9.935	1.44522	2.000	.572	AC-FT= 5.527
ADD HYD	CHANNEL.IN	12&90	99	1.49930	476.51	122.054	1.52639	2.150	.497	
COMPUTE NM HYD	B-5	-	2	.09970	180.28	7.685	1.44524	1.550	2.825	PER IMP= 34.00
ROUTE	B-5.1	2	10	.09970	164.52	7.685	1.44524	1.600	2.578	
ADD HYD	RIOCHNL.1	10&99	10	1.59900	508.09	129.739	1.52133	2.100	.496	
ROUTE	RIOCHNL.2	10	20	1.59900	508.24	129.738	1.52132	2.100	.497	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	23.00	-	2	.03383	79.03	3.240	1.79578	1.500	3.650	PER IMP= 55.00
ADD HYD	RIOCHNL.3	20& 2	20	1.63283	519.66	132.978	1.52701	2.050	.497	
ROUTE	RIOCHNL.3	20	21	1.63283	519.92	132.978	1.52700	2.050	.498	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	ZG1	-	2	.01990	44.10	1.906	1.79578	1.500	3.463	PER IMP= 55.00
ADD HYD	RIOCHNL.3	21& 2	20	1.65273	528.60	134.884	1.53024	2.050	.500	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	B-4	-	2	.07830	163.00	6.035	1.44524	1.500	3.253	PER IMP= 34.00
ADD HYD	B-4.2	2&20	20	1.73103	552.58	140.919	1.52639	2.050	.499	
ROUTE	RIOCHNL.3	20	21	1.73103	552.45	140.918	1.52639	2.050	.499	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	ZG2	-	2	.00208	4.87	.199	1.79578	1.500	3.662	PER IMP= 55.00
ADD HYD	RIOCHNL.4	21& 2	20	1.73311	553.31	141.117	1.52671	2.050	.499	
ROUTE	RIOCHNL.5	20	21	1.73311	552.47	141.116	1.52669	1.950	.498	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	ASW1	-	2	.04422	103.29	4.235	1.79578	1.500	3.650	PER IMP= 55.00
ADD HYD	RIOCHNL.6	21& 2	20	1.77733	577.95	145.351	1.53339	1.550	.508	
ROUTE	RIOCHNL.7	20	21	1.77733	577.62	145.350	1.53338	1.550	.508	
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	ZG3	-	2	.00821	17.25	.786	1.79577	1.500	3.283	PER IMP= 55.00

```
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD          JM1    -     3       .00798       16.77       .764      1.79578    1.500    3.283 PER IMP=  55.00
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD          DL1    -     4       .00786       16.39       .753      1.79577    1.550    3.258 PER IMP=  55.00
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD          LP1    -     5       .00809       17.26       .775      1.79577    1.500    3.334 PER IMP=  55.00
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD          JM2    -     6       .00802       13.63       .768      1.79578    1.600    2.656 PER IMP=  55.00
ADD HYD          RIOCHNL.8 21& 2    20      1.78554      594.79    146.136      1.53458    1.550     .520
ADD HYD          RIOCHNL.9 20& 3    20      1.79352      611.47    146.901      1.53575    1.550     .533
ADD HYD         RIOCHNL.11 20& 4    20      1.80138      627.86    147.653      1.53688    1.550     .545
ADD HYD         RIOCHNL.12 20& 5    20      1.80947      644.81    148.428      1.53804    1.550     .557
ADD HYD         RIOCHNL.13 20& 6    20      1.81749      657.35    149.196      1.53917    1.550     .565
ROUTE           RIOCHNL.14   20     21      1.81749      655.80    149.195      1.53916    1.600     .564
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD          ASW2   -     2       .03856       83.03       3.693     1.79578    1.500    3.364 PER IMP=  55.00
ADD HYD          RIOCHNL.15 21& 2    20      1.85605      736.47    152.888      1.54449    1.550     .620
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD         20.00   -     2       .02900       65.98       2.777     1.79578    1.500    3.555 PER IMP=  55.00
ADD HYD                20.10 20& 2    20      1.88505      797.14    155.666      1.54836    1.550     .661
ROUTE           RIOCHNL.16   20     41      1.88505      797.75    155.665      1.54835    1.550     .661
*S SOUTH RIO BRAVO
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD          B-6    -    42       .26560      566.11      28.944     2.04332    1.550    3.330 PER IMP=  71.00
*S
*S BEGIN ROUTE TO HUBBELL LAKE
*s
COMPUTE NM HYD         D35301   -     2       .14200      304.27      15.475     2.04332    1.550    3.348 PER IMP=  71.00
ROUTE                D35301.5    2     5       .14200      302.78      15.475     2.04332    1.550    3.332
COMPUTE NM HYD         D35303   -     2       .09640      230.17      11.434     2.22402    1.500    3.731 PER IMP=  81.00
ADD HYD              D35303.1  2& 5    2       .23840      530.34      26.909     2.11638    1.550    3.476
ROUTE                D35303.5    2     5       .23840      529.92      26.909     2.11638    1.550    3.473
COMPUTE NM HYD         D35305   -     2       .08410      192.67       9.950     2.21823    1.550    3.580 PER IMP=  81.00
ADD HYD              D35305.1  2& 5   11       .32250      722.59      36.859     2.14294    1.550    3.501
ADD HYD              D35305.2 43&11   43     10.59193     5960.50     628.978     1.11343    1.650     .879
ROUTE                 110.50   43     44     10.59193     5913.13     628.615     1.11278    1.650     .872
RECALL HYD         AN_DMP.HYD   -     30      6.24240     2347.39     601.201     1.80580    2.150     .588
ADD HYD                 AP40 44&30    40     16.83433     7541.01    1229.817     1.36976    1.700     .700
ROUTE RESERVOIR     AMOLE.OUT   40     20     16.83433         .13        .567      .00063   30.000     .000 AC-FT= 1229.291
MODIFY TIME         AMOLE.OUT   20     20     16.83433         .13        .256      .00029   29.900     .000 DT=      .050000
ROUTE                  AP40.5   20     11     16.83433         .13        .256      .00029   29.900     .000
ADD HYD             D40001.01 24&11   11     16.87013       63.49       4.456      .00495    1.650     .006
ADD HYD             D40001.02 23&11   11     16.89823      114.13       7.147      .00793    1.600     .011
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD         D40001   -     2       .07170      140.83       6.640     1.73643    1.500    3.069 PER IMP=  59.00
ADD HYD              D40001.1 11& 2    3     16.96993      248.38      13.787      .01523    1.550     .023
ADD HYD                 RB1.1  3&41    4     18.85498     1046.13     169.452      .16851    1.550     .087
ROUTE                  AP40.5    4     11     18.85498     1058.08     169.451      .16851    1.550     .088
ADD HYD                 2.10 11&42    3     19.12058     1624.19     198.395      .19455    1.550     .133
```

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
RECALL HYD	BR_DMP1.HYD	-	5	1.37030	229.18	115.539	1.58093	1.550	.261	
ADD HYD	RB2.1	3& 5	4	20.49088	1853.37	313.934	.28726	1.550	.141	
ROUTE RESERVOIR	HUBBLE.LAKE	4	99	20.49088	.05	.216	.00020	30.000	.000	AC-FT= 313.834
MODIFY TIME	HUBBLE.LAKE	99	99	20.49088	.05	.098	.00009	26.550	.000	DT= .050000

FINISH

(s10H

AMOLE ARROYO AND HUBBELL LAKE SYSTEM
AHYMO SUMMARY REPORT
EXISTING CONDITIONS

```
(s16.66H
 AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =02/28/2000
 INPUT FILE = P:\DRAINAGE\DMPAHYMO\MEXIST\AA100E1M.DAT                                 USER NO.= AHYMO-S-9702c3URSGrnr-AH

                                                                                                                    PAGE =   1
                          FROM  TO                    PEAK          RUNOFF                TIME TO    CFS
                  HYDROGRAPH   ID   ID        AREA    DISCHARGE     VOLUME      RUNOFF      PEAK      PER
 COMMAND        IDENTIFICATION  NO.  NO.     (SQ MI)   (CFS)       (AC-FT)    (INCHES)   (HOURS)   ACRE     NOTATION

 START                                                                                                    TIME=      .00
 *S
 *S      AMOLE ARROYO AND HUBBLE LAKE SYSTEM
 *S
 *S
 *S 100-YR, 24-HR STORM WITH SEDIMENT
 *S FILE NAME: AA100D1B.DAT  (EXISTING CONDITIONS, MODIFIED AREAS OF TRUNCATED BA
 *S BY: URSGWC
 *S LAST REVISION:2-27-2000
 *S  * MODEL REFLECTS RPSDP-DPM UTIMATE DEVELOPMENT WITH EXISTING CONDITIONS TO T
 *S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE AMOLE ARROYO,
 *S FROM WESTGATE DAM THROUGH TO THE HUBBLE LAKE DETENTION FACILITY.  THIS RUN
 *S USES THE RECALL HYD COMMAND TO INPUT HYDOGRAPHS FROM POWERLINE CHANNEL (PL),
 *S SNOW VISTA CHANNEL (SV), SACATE BLANCO CHANNEL (SB), AMOLE DEL NORTE CHANNEL
 *S (AN), RIO BRAVO (RB), AND THE BORREGA CHANNEL (BR).  THIS RUN ALSO CALCULATES
 *S RUNOFF FROM SUB-BASINS ADJACENT TO THE CHANNEL THAT ARE NOT INCLUDED IN THE
 *S ABOVE MENTIONED HYDROGRAPHS.
 *S ANALYSIS ASSUMPTIONS:
 *S 1. ALL LAND IN THIS BASIN IS MODELED AS EXISTING CONDITION.
 *S
 *S 2. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
 *S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
 *S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
 *S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
 *S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDEN
 *S    DEVELOPMENTS.
 *S
 *S100 YEAR 24HR STORM EXISTING CONDITION
 RAINFALL  TYPE= 2                                                                                        RAIN24=   2.660
 *S RECALL OUTFLOW HYDROGRAPH FROM THE WESTGATE DAM
 RECALL HYD      WG100E1B.HYD   -     5      18.68360        73.15      167.311       .16791   11.250     .006
 *S  HYD NO. WG100E1B.HYD IS ***** AP 01 *****
 *S ROUTE FLOW TO AP02
 ROUTE                WG101.5    5   11      18.68360        73.15      166.107       .16670   11.550     .006
 *S CALCULATE FLOW FROM SUB-BASIN 00102
 *S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
 SEDIMENT BULK                                                                                            PK BF =   1.15
 COMPUTE NM HYD        102.00   -     2        .11190       111.00       3.658       .61291    1.550    1.550 PER IMP=    .00
 *S ADD THE ROUTED FLOW FROM SUB-BASIN WG101.5 TO THE FLOW FROM SUB-BASIN 00102.
 ADD HYD              102.10 11& 2   3      18.79550       131.45      169.765       .16935    1.550     .011
 *S RECALL OUTFLOW HYDROGRAPH FROM POWERLINE CHANNEL
 RECALL HYD      PL100E1B.HYD   -    10       1.69230       501.27       66.890       .74112    2.050     .463
```

```
*S
*S ADD THE RECALLED HYD FROM POWERLINE TO THE ROUTED FLOW
*S FROM SUB-BASIN 00102.1
*S HYD NO. 102.2 IS ***** AP 02 *****
ADD HYD              102.20 10& 3   4      20.48780       561.67     236.656       .21658    2.050     .043
*S ROUTE FLOW IN THE AMOLE ARROYO TO 900 FEET EAST OF POWERLINE CHANNEL.
ROUTE                102.50    4   12      20.48780       561.23     235.937       .21592    2.100     .043
*S
*S CALCULATE FLOW FROM SUB-BASIN 00103A
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                                  PK BF =     1.15
COMPUTE NM HYD       00103A    -     2        .07170        66.41       1.996       .52199    1.550    1.447 PER IMP=     .00
*S ROUTE FLOW THROUGH SUB-BASIN 00103B TO THE AMOLE ARROYO.
ROUTE              00103A.5    2   11        .07170        37.08       1.996       .52201    1.650     .808
*S CALCULATE FLOW FROM SUB-BASIN 00103B
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	00103B	-	2	.12070	67.15	3.253	.50526	1.650	.869	PER IMP= .00
*S ADD THE ROUTE FLOW FROM SUB-BASIN 00103A.5 TO THE FLOW										
*S FROM SUB-BASIN 00103B.										
ADD HYD	00103B.1	11& 2	3	.19240	104.23	5.249	.51150	1.650	.846	
*S ADD THE COMBINED FLOW FROM SUB-BASIN 00103B.1 TO THE ROUTED FLOW										
*S IN THE AMOLE ARROYO.										
ADD HYD	00103B.2	12& 3	4	20.68020	627.81	241.186	.21867	1.700	.047	
*S ROUTE FLOW FROM SUB-BASIN 00103B.2 IN THE AMOLE ARROYO TO										
*S DELGADO STREET.										
ROUTE	00103B.5	4	11	20.68020	636.46	240.711	.21824	1.700	.048	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00104										
*S GENERATION OF SEDIMENT POSSIBLE IN PARTLY DEVELOPED SUB-BASIN,										
*S BULK FLOWS 6%										
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	104.00	-	2	.01830	35.48	1.255	1.28543	1.500	3.030	PER IMP= 26.00
*S ADD THE FLOW FROM SUB-BASIN 00104 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
*S HYD NO. 00104.1 IS ***** AP 02.1 *****										
ADD HYD	104.10	11& 2	3	20.69850	652.20	241.966	.21919	1.700	.049	
*S ROUTE FLOW FROM SUB-BASIN 00104 IN THE AMOLE ARROYO TO 2220 FEET WEST										
*S FOR SNOW VISTA CHANNEL										
ROUTE	104.50	3	11	20.69850	588.24	240.684	.21803	2.150	.044	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00105										
*S GENERATION OF SEDIMENT POSSIBLE IN PARTLY DEVELOPED SUB-BASIN,										
*S BULK FLOWS 6%										
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	105.00	-	2	.07390	99.62	3.978	1.00923	1.500	2.106	PER IMP= 22.00
*S ADD THE FLOW FROM SUB-BASIN 00105 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
*S HYD NO. 00105.1 IS ***** AP 02.2 *****										
ADD HYD	105.10	11& 2	3	20.77240	618.60	244.662	.22084	1.800	.047	
*S ROUTE FLOW FROM SUB-BASIN 00105 IN THE AMOLE ARROYO TO SNOW VISTA CHANNEL.										
ROUTE	105.50	3	11	20.77240	600.24	243.703	.21998	1.850	.045	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00106										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	106.00	-	2	.04150	40.08	1.137	.51360	1.500	1.509	PER IMP= .00
*S ADD THE FLOW FROM SUB-BASIN 00106 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
ADD HYD	106.10	11& 2	3	20.81390	607.40	244.840	.22056	1.850	.046	
*S RECALL OUTFLOW HYDROGRAPH FROM SNOW VISTA CHANNEL.										
RECALL HYD	SV100E1B.HYD	-	2	1.80220	1828.07	105.681	1.09950	1.600	1.585	
*S										

```
*S ADD THE OUTFLOW HYDROGRAPH FROM SNOW VISTA CHANNEL TO THE FLOW
*S IN THE AMOLE ARROYO.
*S HYD NO. 00106.2 IS ***** AP 03 *****
ADD HYD              106.20  3& 2   4      22.61610      1985.75     350.521       .29060    1.600      .137
*S ROUTE COMBINED FLOW FROM SUB-BASIN 00106.2 IN THE AMOLE ARROYO TO
*S 1970 FEET EAST OF THE SNOW VISTA CHANNEL.
ROUTE                106.50    4   12      22.61610      1997.71     349.572       .28981    1.650      .138
*S
*S CALCULATE FLOW FROM SUB-BASIN 00107
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                                  PK BF =     1.15
COMPUTE NM HYD       107.00    -     2        .08784        66.00       2.465       .52620    1.550    1.174 PER IMP=     .00
*S ROUTE FLOW THROUGH SUB-BASIN 00108 TO THE AMOLE ARROYO.
```

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	107.50	2	11	.08784	33.97	2.465	.52622	1.750	.604	
*S CALCULATE FLOW FROM SUB-BASIN 00108										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	108.00	-	2	.22610	177.40	6.193	.51360	1.550	1.226	PER IMP= .00
*S ADD THE ROUTE FLOW FROM SUB-BASIN 00107.5 TO THE FLOW										
*S FROM SUB-BASIN 00108										
ADD HYD	108.10	11& 2	3	.31394	197.12	8.659	.51713	1.600	.981	
*S ADD THE COMBINED FLOW FROM SUB-BASIN 00108.1 TO THE ROUTED FLOW										
*S IN THE AMOLE ARROYO.										
ADD HYD	108.20	12& 3	4	22.93004	2179.85	358.230	.29293	1.650	.149	
*S CALCULATE FLOW FROM SUB-BASIN 00109										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	109.00	-	2	.06080	35.97	1.638	.50526	1.600	.924	PER IMP= .00
*S ADD THE FLOW FROM SUB-BASIN 00109 TO THE COMBINED FLOW IN THE AMOLE ARROYO.										
ADD HYD	109.10	4& 2	3	22.99084	2214.95	359.869	.29349	1.650	.151	
*S ROUTE FLOW FROM SUB-BASIN 00109.1 IN THE AMOLE ARROYO TO THE SACATE BLANCO CH										
ROUTE	109.50	3	11	22.99084	2078.82	358.358	.29226	1.700	.141	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00110										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	110.00	-	2	.06430	40.31	1.733	.50526	1.600	.980	PER IMP= .00
*S ADD THE FLOW FROM SUB-BASIN 00110 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
ADD HYD	110.10	11& 2	3	23.05514	2113.03	360.090	.29285	1.700	.143	
*S RECALL										
*S RECALL OUTFLOW HYDROGRAPH FROM SACATE BLANCO CHANNEL.										
RECALL HYD	SB100E1B.HYD	-	2	1.52830	901.01	43.432	.53285	1.750	.921	
*S										
*S ADD THE OUTFLOW HYDROGRAPH FROM THE SACATE BLANCO CHANNEL TO THE FLOW										
*S IN THE AMOLE ARROYO.										
*S HYD NO. 00110.2 IS ***** AP 04 *****										
ADD HYD	110.20	3& 2	4	24.58344	3000.45	403.522	.30777	1.700	.191	
*S ROUTE COMBINED FLOW FROM SUB-BASIN 00110.2 IN THE AMOLE ARROYO TO										
*S THE AMOLE DETENTION FACILITY.										
ROUTE	110.50	4	11	24.58344	3005.59	403.227	.30754	1.750	.191	
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE AMOLE DEL NORTE WATERSHED										
RECALL HYD	AN100E1B.HYD	-	30	6.30250	1642.96	252.210	.75033	1.700	.407	
*S ADD THE FLOW FROM THE AMOLE ARROYO TO THE FLOW FROM THE AMOLE DEL NORTE										
*S CHANNEL. THIS IS THE TOTAL FLOW INTO THE AMOLE DETENTION FACILITY.										
*S HYD NO. AP40 IS ***** AP 40 *****										
ADD HYD	AP40	11&30	40	30.88594	4644.85	655.437	.39790	1.700	.235	
*S										
*S IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM										

```
*S                  OTHER PONDS. THEREFORE, VERIFY VOLUME FROM THE OUTFLOW
*S                  HYDROGRAPH.  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*S                  TRUNCATED FROM THE INFLOW HYDROGRAPH.
*S
*S ROUTE THE FLOW IN THE AMOLE DETENTION FACILITY WITH THE ROUTE RESERVOIR
ROUTE RESERVOIR    AMOLE.OUT   40   41      30.88594       121.79     162.901       .09889   12.750      .006 AC-FT=  493.688
*S HYD NO. AMOLE.OUT IS ***** AP 41 *****
*S  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 40.1 = 0 CFS
*S  ROUTE THE OUTFLOW DOWN THE AMOLE/HUBBLE DIVERSION CHANNEL TO 300 FEET
*S  NORTH OF THE PROPOSED RIO BRAVO CROSSING
ROUTE                 AP40.5   41   11      30.88594       121.77     162.452       .09862   12.800      .006
*S CALCULATE THE FLOW FROM SUB-BASIN 40001
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                                                PK BF =    1.15
```

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	E40001	-	2	.07170	63.10	2.420	.63292	1.550	1.375	PER IMP= 3.00
*S ADD THE ROUTED FLOW FROM SUB-BASIN AP40.5 TO THE FLOW FROM SUB-BASIN 40001.										
ADD HYD	E40001.1 11&	2	3	30.95764	121.81	164.872	.09986	12.800	.006	
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE NORTH PORTION OF RIO BRAVO										
RECALL HYD	RB100E1B.HYD	-	5	.59780	400.38	21.094	.66162	1.650	1.046	
*S ADD THE FLOW FROM THE RECALLED HYDROGRAPH TO THE FLOW FROM SUB-BASIN 40001.1										
*S HYD NO. RB1.1 IS ***** AP 42 *****										
ADD HYD	RB1.1 3&	5	4	31.55544	456.82	185.966	.11050	1.600	.023	
*S ROUTE THE COMBINED FLOW INTO HUBBLE LAKE										
ROUTE	AP40.5	4	11	31.55544	461.53	185.801	.11040	1.650	.023	
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE SOUTH PORTION OF RIO BRAVO.										
RECALL HYD	RB100E2B.HYD	-	5	.84640	356.77	22.808	.50526	1.750	.659	
*S ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.										
ADD HYD	2.10 11&	5	3	32.40184	778.65	208.609	.12072	1.700	.038	
*S RECALL THE HYDROGRAPH FROM THE BORREGA WATERSHED.										
RECALL HYD	BR100E1B.HYD	-	5	1.38790	612.06	41.060	.55470	1.800	.689	
*S ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.										
*S HYD NO. RB2.1 IS ***** AP 50 *****										
ADD HYD	2.10 3&	5	4	33.78974	1324.72	249.669	.13854	1.750	.061	
*S ROUTE THE TOTAL FLOW INTO HUBBLE LAKE WITH THE ROUTE RESERVOIR.										
*S										
*S IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM										
*S OTHER PONDS. THEREFORE, VERIFY VOLUME FROM THE OUTFLOW										
*S HYDROGRAPH. THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF										
*S TRUNCATED FROM THE INFLOW HYDROGRAPH.										
*S										
ROUTE RESERVOIR	HUBBLE.LAKE	4	99	33.78974	.04	.054	.00003	29.950	.000	AC-FT= 249.441
*S NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 50.1 = 0 CFS										
*S HYD NO. 99 IS ***** AP 50.2 *****										
FINISH										

(s10H

```
(s16.66H
 AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =02/28/2000
 INPUT FILE = P:\DRAINAGE\DMPAHYMO\MEXIST\AA100E1M.DAT                                 USER NO.= AHYMO-S-9702c3URSGrnr-AH

                                FROM  TO                    PEAK          RUNOFF              TIME TO    CFS       PAGE =   1
                    HYDROGRAPH   ID   ID         AREA      DISCHARGE      VOLUME      RUNOFF     PEAK     PER
 COMMAND        IDENTIFICATION   NO.  NO.       (SQ MI)     (CFS)        (AC-FT)    (INCHES)   (HOURS)  ACRE      NOTATION

 START                                                                                                    TIME=        .00
 *S
 *S      AMOLE ARROYO AND HUBBLE LAKE SYSTEM
 *S
 *S
 *S 100-YR, 24-HR STORM WITH SEDIMENT
 *S FILE NAME: AA100D1B.DAT  (EXISTING CONDITIONS, MODIFIED AREAS OF TRUNCATED BA
 *S BY: URSGWC
 *S LAST REVISION:2-27-2000
 *S  * MODEL REFLECTS RPSDP-DPM UTIMATE DEVELOPMENT WITH EXISTING CONDITIONS TO T
 *S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE AMOLE ARROYO,
 *S FROM WESTGATE DAM THROUGH TO THE HUBBLE LAKE DETENTION FACILITY.  THIS RUN
 *S USES THE RECALL HYD COMMAND TO INPUT HYDOGRAPHS FROM POWERLINE CHANNEL (PL),
 *S SNOW VISTA CHANNEL (SV), SACATE BLANCO CHANNEL (SB), AMOLE DEL NORTE CHANNEL
 *S (AN), RIO BRAVO (RB), AND THE BORREGA CHANNEL (BR).  THIS RUN ALSO CALCULATES
 *S RUNOFF FROM SUB-BASINS ADJACENT TO THE CHANNEL THAT ARE NOT INCLUDED IN THE
 *S ABOVE MENTIONED HYDROGRAPHS.
 *S ANALYSIS ASSUMPTIONS:
 *S 1. ALL LAND IN THIS BASIN IS MODELED AS EXISTING CONDITION.
 *S
 *S 2. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
 *S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
 *S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
 *S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
 *S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDEN
 *S    DEVELOPMENTS.
 *S
 *S100 YEAR 24HR STORM EXISTING CONDITION
 RAINFALL  TYPE= 2                                                                                        RAIN24=   2.660
 *S RECALL OUTFLOW HYDROGRAPH FROM THE WESTGATE DAM
 RECALL HYD      WG100E1B.HYD   -     5      18.68360       73.15     167.311      .16791   11.250     .006
 *S  HYD NO. WG100E1B.HYD IS ***** AP 01 *****
 *S ROUTE FLOW TO AP02
 ROUTE               WG101.5    5   11      18.68360       73.15     166.107      .16670   11.550     .006
 *S CALCULATE FLOW FROM SUB-BASIN 00102
 *S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
 SEDIMENT BULK                                                                                            PK BF =   1.15
 COMPUTE NM HYD        102.00   -     2        .11190       111.00      3.658       .61291    1.550    1.550 PER IMP=    .00
 *S ADD THE ROUTED FLOW FROM SUB-BASIN WG101.5 TO THE FLOW FROM SUB-BASIN 00102.
 ADD HYD             102.10 11& 2   3      18.79550       131.45     169.765      .16935    1.550     .011
 *S RECALL OUTFLOW HYDROGRAPH FROM POWERLINE CHANNEL
 RECALL HYD      PL100E1B.HYD   -    10       1.69230       501.27      66.890      .74112    2.050     .463
```

```
*S
*S ADD THE RECALLED HYD FROM POWERLINE TO THE ROUTED FLOW
*S FROM SUB-BASIN 00102.1
*S HYD NO. 102.2 IS ***** AP 02 *****
ADD HYD              102.20 10& 3   4      20.48780       561.67     236.656       .21658    2.050      .043
*S ROUTE FLOW IN THE AMOLE ARROYO TO 900 FEET EAST OF POWERLINE CHANNEL.
ROUTE                102.50    4   12      20.48780       561.23     235.937       .21592    2.100      .043
*S
*S CALCULATE FLOW FROM SUB-BASIN 00103A
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                                    PK BF =     1.15
COMPUTE NM HYD       00103A    -     2        .07170        66.41       1.996       .52199    1.550    1.447 PER IMP=     .00
*S ROUTE FLOW THROUGH SUB-BASIN 00103B TO THE AMOLE ARROYO.
ROUTE              00103A.5    2   11        .07170        37.08       1.996       .52201    1.650     .808
*S CALCULATE FLOW FROM SUB-BASIN 00103B
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	00103B	-	2	.12070	67.15	3.253	.50526	1.650	.869	PER IMP= .00
*S ADD THE ROUTE FLOW FROM SUB-BASIN 00103A.5 TO THE FLOW										
*S FROM SUB-BASIN 00103B.										
ADD HYD	00103B.1	11& 2	3	.19240	104.23	5.249	.51150	1.650	.846	
*S ADD THE COMBINED FLOW FROM SUB-BASIN 00103B.1 TO THE ROUTED FLOW										
*S IN THE AMOLE ARROYO.										
ADD HYD	00103B.2	12& 3	4	20.68020	627.81	241.186	.21867	1.700	.047	
*S ROUTE FLOW FROM SUB-BASIN 00103B.2 IN THE AMOLE ARROYO TO										
*S DELGADO STREET.										
ROUTE	00103B.5	4	11	20.68020	636.46	240.711	.21824	1.700	.048	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00104										
*S GENERATION OF SEDIMENT POSSIBLE IN PARTLY DEVELOPED SUB-BASIN,										
*S BULK FLOWS 6%										
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	104.00	-	2	.01830	35.48	1.255	1.28543	1.500	3.030	PER IMP= 26.00
*S ADD THE FLOW FROM SUB-BASIN 00104 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
*S HYD NO. 00104.1 IS ***** AP 02.1 *****										
ADD HYD	104.10	11& 2	3	20.69850	652.20	241.966	.21919	1.700	.049	
*S ROUTE FLOW FROM SUB-BASIN 00104 IN THE AMOLE ARROYO TO 2220 FEET WEST										
*S FOR SNOW VISTA CHANNEL										
ROUTE	104.50	3	11	20.69850	588.24	240.684	.21803	2.150	.044	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00105										
*S GENERATION OF SEDIMENT POSSIBLE IN PARTLY DEVELOPED SUB-BASIN,										
*S BULK FLOWS 6%										
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	105.00	-	2	.07390	99.62	3.978	1.00923	1.500	2.106	PER IMP= 22.00
*S ADD THE FLOW FROM SUB-BASIN 00105 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
*S HYD NO. 00105.1 IS ***** AP 02.2 *****										
ADD HYD	105.10	11& 2	3	20.77240	618.60	244.662	.22084	1.800	.047	
*S ROUTE FLOW FROM SUB-BASIN 00105 IN THE AMOLE ARROYO TO SNOW VISTA CHANNEL.										
ROUTE	105.50	3	11	20.77240	600.24	243.703	.21998	1.850	.045	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00106										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	106.00	-	2	.04150	40.08	1.137	.51360	1.500	1.509	PER IMP= .00
*S ADD THE FLOW FROM SUB-BASIN 00106 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
ADD HYD	106.10	11& 2	3	20.81390	607.40	244.840	.22056	1.850	.046	
*S RECALL OUTFLOW HYDROGRAPH FROM SNOW VISTA CHANNEL.										
RECALL HYD	SV100E1B.HYD	-	2	1.80220	1828.07	105.681	1.09950	1.600	1.585	
*S										

```
*S ADD THE OUTFLOW HYDROGRAPH FROM SNOW VISTA CHANNEL TO THE FLOW
*S IN THE AMOLE ARROYO.
*S HYD NO. 00106.2 IS ***** AP 03 *****
ADD HYD              106.20  3& 2   4      22.61610      1985.75     350.521       .29060    1.600      .137
*S ROUTE COMBINED FLOW FROM SUB-BASIN 00106.2 IN THE AMOLE ARROYO TO
*S 1970 FEET EAST OF THE SNOW VISTA CHANNEL.
ROUTE                106.50    4   12      22.61610      1997.71     349.572       .28981    1.650      .138
*S
*S CALCULATE FLOW FROM SUB-BASIN 00107
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                                  PK BF =     1.15
COMPUTE NM HYD       107.00    -     2        .08784        66.00       2.465       .52620    1.550    1.174 PER IMP=     .00
*S ROUTE FLOW THROUGH SUB-BASIN 00108 TO THE AMOLE ARROYO.
```

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	107.50	2	11	.08784	33.97	2.465	.52622	1.750	.604	
*S CALCULATE FLOW FROM SUB-BASIN 00108										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	108.00	-	2	.22610	177.40	6.193	.51360	1.550	1.226	PER IMP= .00
*S ADD THE ROUTE FLOW FROM SUB-BASIN 00107.5 TO THE FLOW										
*S FROM SUB-BASIN 00108										
ADD HYD	108.10	11& 2	3	.31394	197.12	8.659	.51713	1.600	.981	
*S ADD THE COMBINED FLOW FROM SUB-BASIN 00108.1 TO THE ROUTED FLOW										
*S IN THE AMOLE ARROYO.										
ADD HYD	108.20	12& 3	4	22.93004	2179.85	358.230	.29293	1.650	.149	
*S CALCULATE FLOW FROM SUB-BASIN 00109										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	109.00	-	2	.06080	35.97	1.638	.50526	1.600	.924	PER IMP= .00
*S ADD THE FLOW FROM SUB-BASIN 00109 TO THE COMBINED FLOW IN THE AMOLE ARROYO.										
ADD HYD	109.10	4& 2	3	22.99084	2214.95	359.869	.29349	1.650	.151	
*S ROUTE FLOW FROM SUB-BASIN 00109.1 IN THE AMOLE ARROYO TO THE SACATE BLANCO CH										
ROUTE	109.50	3	11	22.99084	2078.82	358.358	.29226	1.700	.141	
*S										
*S CALCULATE FLOW FROM SUB-BASIN 00110										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
COMPUTE NM HYD	110.00	-	2	.06430	40.31	1.733	.50526	1.600	.980	PER IMP= .00
*S ADD THE FLOW FROM SUB-BASIN 00110 TO THE ROUTED FLOW IN THE AMOLE ARROYO.										
ADD HYD	110.10	11& 2	3	23.05514	2113.03	360.090	.29285	1.700	.143	
*S RECALL										
*S RECALL OUTFLOW HYDROGRAPH FROM SACATE BLANCO CHANNEL.										
RECALL HYD	SB100E1B.HYD	-	2	1.52830	901.01	43.432	.53285	1.750	.921	
*S										
*S ADD THE OUTFLOW HYDROGRAPH FROM THE SACATE BLANCO CHANNEL TO THE FLOW										
*S IN THE AMOLE ARROYO.										
*S HYD NO. 00110.2 IS ***** AP 04 *****										
ADD HYD	110.20	3& 2	4	24.58344	3000.45	403.522	.30777	1.700	.191	
*S ROUTE COMBINED FLOW FROM SUB-BASIN 00110.2 IN THE AMOLE ARROYO TO										
*S THE AMOLE DETENTION FACILITY.										
ROUTE	110.50	4	11	24.58344	3005.59	403.227	.30754	1.750	.191	
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE AMOLE DEL NORTE WATERSHED										
RECALL HYD	AN100E1B.HYD	-	30	6.30250	1642.96	252.210	.75033	1.700	.407	
*S ADD THE FLOW FROM THE AMOLE ARROYO TO THE FLOW FROM THE AMOLE DEL NORTE										
*S CHANNEL. THIS IS THE TOTAL FLOW INTO THE AMOLE DETENTION FACILITY.										
*S HYD NO. AP40 IS ***** AP 40 *****										
ADD HYD	AP40	11&30	40	30.88594	4644.85	655.437	.39790	1.700	.235	
*S										
*S IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM										

```
*S                  OTHER PONDS. THEREFORE, VERIFY VOLUME FROM THE OUTFLOW
*S                  HYDROGRAPH.  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*S                  TRUNCATED FROM THE INFLOW HYDROGRAPH.
*S
*S ROUTE THE FLOW IN THE AMOLE DETENTION FACILITY WITH THE ROUTE RESERVOIR
ROUTE RESERVOIR    AMOLE.OUT   40   41      30.88594       121.79     162.901       .09889   12.750      .006 AC-FT=  493.688
*S HYD NO. AMOLE.OUT IS ***** AP 41 *****
*S  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 40.1 = 0 CFS
*S  ROUTE THE OUTFLOW DOWN THE AMOLE/HUBBLE DIVERSION CHANNEL TO 300 FEET
*S  NORTH OF THE PROPOSED RIO BRAVO CROSSING
ROUTE                 AP40.5   41   11      30.88594       121.77     162.452       .09862   12.800      .006
*S CALCULATE THE FLOW FROM SUB-BASIN 40001
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                                                PK BF =    1.15
```

```
                                FROM  TO                    PEAK          RUNOFF              TIME TO    CFS
                   HYDROGRAPH    ID   ID         AREA     DISCHARGE      VOLUME      RUNOFF     PEAK      PER
COMMAND          IDENTIFICATION  NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)   ACRE     NOTATION

COMPUTE NM HYD         E40001    -     2        .07170       63.10       2.420      .63292    1.550    1.375 PER IMP=   3.00
*S  ADD THE ROUTED FLOW FROM SUB-BASIN AP40.5 TO THE FLOW FROM SUB-BASIN 40001.
ADD HYD             E40001.1 11& 2    3      30.95764      121.81     164.872      .09986   12.800     .006
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE NORTH PORTION OF RIO BRAVO
RECALL HYD      RB100E1B.HYD    -     5        .59780      400.38      21.094      .66162    1.650    1.046
*S ADD THE FLOW FROM THE RECALLED HYDROGRAPH TO THE FLOW FROM SUB-BASIN 40001.1
*S HYD NO. RB1.1 IS ***** AP 42 *****
ADD HYD                 RB1.1  3& 5    4      31.55544      456.82     185.966      .11050    1.600     .023
*S ROUTE THE COMBINED FLOW INTO HUBBLE LAKE
ROUTE                   AP40.5    4   11      31.55544      461.53     185.801      .11040    1.650     .023
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE SOUTH PORTION OF RIO BRAVO.
RECALL HYD      RB100E2B.HYD    -     5        .84640      356.77      22.808      .50526    1.750     .659
*S ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.
ADD HYD                2.10 11& 5    3      32.40184      778.65     208.609      .12072    1.700     .038
*S RECALL THE HYDROGRAPH FROM THE BORREGA WATERSHED.
RECALL HYD      BR100E1B.HYD    -     5       1.38790      612.06      41.060      .55470    1.800     .689
*S ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.
*S HYD NO. RB2.1 IS ***** AP 50 *****
ADD HYD                2.10  3& 5    4      33.78974     1324.72     249.669      .13854    1.750     .061
*S ROUTE THE TOTAL FLOW INTO HUBBLE LAKE WITH THE ROUTE RESERVOIR.
*S
*S  IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM
*S                  OTHER PONDS. THEREFORE, VERIFY VOLUME FROM THE OUTFLOW
*S                  HYDROGRAPH.  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*S                  TRUNCATED FROM THE INFLOW HYDROGRAPH.
*S
ROUTE RESERVOIR  HUBBLE.LAKE    4   99      33.78974          .04         .054      .00003   29.950     .000 AC-FT=  249.441
*S  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 50.1 = 0 CFS
*S HYD NO. 99 IS ***** AP 50.2 *****
FINISH
(s10H
```

SECATE BLANCO WATERSHED
AHYMO SUMMARY REPORT
EXISTING CONDITIONS

```
(s16.66H
 AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =03/04/2000
 INPUT FILE = P:\DRAINAGE\DMPAHYMO\MEXIST\SB100E1M.DAT                                 USER NO.= AHYMO-S-9702c3URSGrnr-AH

                                FROM  TO                    PEAK         RUNOFF              TIME TO    CFS      PAGE =   1
                    HYDROGRAPH   ID   ID         AREA     DISCHARGE      VOLUME      RUNOFF     PEAK     PER
 COMMAND        IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)   ACRE     NOTATION

 START                                                                                                    TIME=       .00
 *S
 *S      SACATE BLANCO WATERSHED
 *S
 *S
 *S 100-YR, 24-HR STORM WITH SEDIMENT
 *S FILE NAME: SB100E1BM.DAT  (EXISTING CONDITIONS)
 *S BY:URSGWC
 *S LAST REVISION: 2-27-2000
 *S* MODEL REFLECTS RPSDP-DPM UTIMATE DEVELOPMENT WITH EXISTING CONDITIONS
 *S  TO THE WEST
 *S*************************************************************************
 *S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE SACATE BLANCO
 *S WATERSHED.  FLOWS FROM THIS BASIN IS CONVEYED TO THE AMOLE DETENTION FACILITY
 *S VIA THE AMOLE ARROYO.  BASIN BOUNDARIES WERE DETERMINED FROM NOVEMBER 1995
 *S AREIAL, TOPOGRAPHICAL MAPS AND PREVIOUS STUDIES.
 *S
 *S NOTE: AN "E" (EXISTING) HAS BEEN PLACED IN FRONT OF EACH SUB-BASIN HYDROGRAPH
 *S       DESIGNATION DUE TO THE LIMITATIONS OF AHYMO
 *S
 *S*************************************************************************
 *S ANALYSIS ASSUMPTIONS:
 *S*************************************************************************
 *S 1. ALL LAND IN THIS BASIN IS MODELED AS EXISTING CONDITION.
 *S
 *S 2. THE PUNCH HYD COMMAND WAS ADDED TO THE END OF THIS FILE SO THE OUTFALL
 *S    HYDROGRAPH COULD BE USED IN THE AMOLE ARROYO EXISTING CONDITIONS MODEL
 *S    AA100E1B.DAT, WHICH WILL BE USED IN THE ANALYSIS OF THE AMOLE/HUBBLE
 *S    LAKE DETENTION SYSTEM.
 *S
 *S 3. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
 *S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
 *S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
 *S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
 *S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDEN
 *S    DEVELOPMENTS.
 *S
 *S100 YEAR 24HR STORM EXISTING CONDITION
 RAINFALL  TYPE= 2                                                                      RAIN24=    2.660
 *S CALCULATE THE FLOW FROM SUB-BASIN 60101.
 *S BASIN 60101 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
 SEDIMENT BULK                                                                          PK BF =    1.15
```

```
COMPUTE NM HYD        E60101    -     2        .04820        33.63        1.299        .50526    1.550    1.090 PER IMP=     .00
*S ROUTE FLOW FROM SUB-BASIN 60101 THROUGH SUB-BASIN 60102.
ROUTE                 E60101.5    2   11        .04820        33.69        1.299        .50529    1.600    1.092
*S CALCULATE THE FLOW FROM SUB-BASIN 60102.
*S BASIN 60102 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                 PK BF =    1.15
COMPUTE NM HYD        E60102    -     2        .10190        62.75        2.746        .50526    1.600     .962 PER IMP=     .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60101.5 TO THE FLOW FROM SUB-BASIN 60102.
ADD HYD               E60102.1 11& 2   3        .15010        96.44        4.045        .50527    1.600    1.004
*S ROUTE COMBINED FLOW FROM SUB-BASIN 60102.1 THROUGH SUB-BASIN 60103.
ROUTE                 E60102.5    3   11        .15010        95.05        4.045        .50528    1.650     .989
*S CALCULATE THE FLOW FROM SUB-BASIN 60103.
*S BASIN 60103 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                 PK BF =    1.15
                                FROM  TO                      PEAK          RUNOFF                TIME TO    CFS      PAGE =    2
                     HYDROGRAPH   ID   ID          AREA     DISCHARGE      VOLUME      RUNOFF      PEAK      PER
COMMAND          IDENTIFICATION   NO.  NO.       (SQ MI)      (CFS)       (AC-FT)    (INCHES)    (HOURS)   ACRE     NOTATION

COMPUTE NM HYD        E60103    -     2        .03920        26.10        1.056        .50526    1.600    1.040 PER IMP=     .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60102.5 TO THE FLOW FROM SUB-BASIN 60103.
ADD HYD               E60103.1 11& 2   9        .18930       119.13        5.101        .50527    1.650     .983
*S
*S CALCULATE THE FLOW FROM SUB-BASIN 60104.
*S BASIN 60104 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                 PK BF =    1.15
COMPUTE NM HYD        E60104    -     2        .15600       210.25        5.683        .68305    1.500    2.106 PER IMP=     .00
*S ROUTE FLOW FROM SUB-BASIN 60104 THROUGH SUB-BASIN 60105.
ROUTE                 E60104.5    2   11        .15600       146.91        5.683        .68305    1.600    1.471
*S CALCULATE THE FLOW FROM SUB-BASIN 60105.
*S BASIN 60105 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                 PK BF =    1.15
COMPUTE NM HYD        E60105    -     2        .09000        66.04        2.425        .50526    1.550    1.147 PER IMP=     .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60104.5 TO THE FLOW FROM SUB-BASIN 60105.
ADD HYD               E60105.1 11& 2   3        .24600       211.48        8.108        .61800    1.600    1.343
*S CALCULATE THE FLOW FROM SUB-BASIN 60106.
*S BASIN 60106 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                 PK BF =    1.15
COMPUTE NM HYD        E60106    -     2        .07950        77.03        2.231        .52620    1.500    1.514 PER IMP=     .00
*S ROUTE FLOW FROM SUB-BASIN 60106 THROUGH SUB-BASIN 60105.
ROUTE                 E60106.5    2   11        .07950        42.66        2.231        .52622    1.650     .838
ADD HYD                      11& 3   11        .32550       250.86       10.339        .59558    1.600    1.204
*S
*S OFFSITE FLOW AT EDGE OF RBSDP AREA                                **
*S
*S CALCULATE THE FLOW FROM SUB-BASIN 60107A.
*S BASIN 60107 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                 PK BF =    1.15
COMPUTE NM HYD        E60107A   -     2        .04300        40.78        1.159        .50526    1.500    1.482 PER IMP=     .00
*S ROUTE FLOW FROM SUB-BASIN 60107A THROUGH SUB-BASIN 60107B.
ROUTE                 E60107A.5   2   12        .04300        17.52        1.159        .50530    1.650     .637
```

```
*S CALCULATE THE FLOW FROM SUB-BASIN 60107B.
*S BASIN 60107B IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
COMPUTE NM HYD       E60107B   -     6        .05865       55.62       1.580      .50526   1.500   1.482 PER IMP=    .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60107A.5 TO THE FLOW FROM SUB-BASIN 60107B
ADD HYD              E60107B.1 12& 6   7       .10165       65.87       2.739      .50527   1.550   1.013
*S
*S OFFSITE FLOW AT EDGE OF RBSDP AREA                                  **
*S
*S CALCULATE THE FLOW FROM SUB-BASIN 60108.
*S BASIN 60108 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
COMPUTE NM HYD       E60108    -     2        .09240      112.42       3.094      .62789   1.500   1.901 PER IMP=    .00
*S ROUTE FLOW FROM SUB-BASIN 60108 THROUGH SUB-BASIN 60109.
ROUTE                E60108.5  2   11        .09240       88.88       3.094      .62791   1.600   1.503
*S CALCULATE THE FLOW FROM SUB-BASIN 60109.
*S BASIN 60109 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
COMPUTE NM HYD       E60109    -     2        .10230      102.29       2.922      .53563   1.500   1.562 PER IMP=    .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60108.5 TO THE FLOW FROM SUB-BASIN 60109.
ADD HYD              E60109.1 11& 2   19       .19470      180.15       6.017      .57942   1.550   1.446
*S CALCULATE THE FLOW FROM SUB-BASIN 60110.
*S BASIN 60110 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
COMPUTE NM HYD       E60110    -     2        .10460      121.83       3.351      .60062   1.500   1.820 PER IMP=    .00
*S ROUTE FLOW FROM SUB-BASIN 60110 THROUGH SUB-BASIN 60111.
ROUTE                E60110.5  2   11        .10460      103.61       3.351      .60064   1.600   1.548
*S CALCULATE THE FLOW FROM SUB-BASIN 60111.
                                FROM  TO                  PEAK        RUNOFF                TIME TO   CFS       PAGE =   3
                    HYDROGRAPH   ID   ID        AREA     DISCHARGE    VOLUME     RUNOFF     PEAK     PER
COMMAND        IDENTIFICATION    NO.  NO.     (SQ MI)     (CFS)      (AC-FT)   (INCHES)   (HOURS)  ACRE     NOTATION

*S BASIN 60111 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
COMPUTE NM HYD       E60111    -     2        .05580       52.92       1.504      .50526   1.500   1.482 PER IMP=    .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60110.5 TO THE FLOW FROM SUB-BASIN 60111.
ADD HYD              E60111.1 11& 2   3        .16040      149.54       4.854      .56745   1.550   1.457
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60111.1 THROUGH SUB-BASIN 60109.
ROUTE                E60111.5  3   11        .16040      150.56       4.854      .56746   1.600   1.467
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60111.5 TO THE COMBINED FLOW
*S FROM SUB-BASIN 60109.1.
ADD HYD              E60111.2 19&11   3        .35510      328.01      10.871      .57402   1.550   1.443
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60111.2 THROUGH SUB-BASIN 60112.
ROUTE                E60111.6  3   11        .35510      291.64      10.871      .57402   1.650   1.283
*S CALCULATE THE FLOW FROM SUB-BASIN 60112.
*S BASIN 60112 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
COMPUTE NM HYD       E60112    -     2        .04320       30.32       1.164      .50526   1.550   1.097 PER IMP=    .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60111.6 TO THE FLOW FROM SUB-BASIN 60112.
ADD HYD              E60112.1 11& 2   3        .39830      318.58      12.035      .56656   1.650   1.250
```

```
 ROUTE RESERVOIR    TEMPPOND1    3    4        .39830       225.22       12.035       .56656    1.750     .884 AC-FT=    3.336
 *S
 *S OFFSITE FLOW AT EDGE OF RBSDP AREA                                          **
 *S
 *S CALCULATE THE FLOW FROM SUB-BASIN 60113.
 *S BASIN 60113 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
 SEDIMENT BULK                                                                                                  PK BF =    1.15
 COMPUTE NM HYD       E60113   -     2        .05800        56.05        1.589       .51360    1.500    1.510 PER IMP=     .00
 *S CALCULATE THE FLOW FROM SUB-BASIN 60114.
 *S BASIN 60114 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
 SEDIMENT BULK                                                                                                  PK BF =    1.15
 COMPUTE NM HYD       E60114   -     3        .21620       249.42        6.534       .56663    1.500    1.803 PER IMP=     .00
 *S ADD THE FLOW FROM SUB-BASIN 60113 TO THE FLOW FROM SUB-BASIN 60114.
 ADD HYD              E60114.1  2& 3   4        .27420       305.47        8.122       .55541    1.500    1.741
 *S CALCULATE THE FLOW FROM SUB-BASIN 60115.
 *S BASIN 60115 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
 SEDIMENT BULK                                                                                                  PK BF =    1.15
 COMPUTE NM HYD       E60115   -     2        .07640        77.85        2.183       .53563    1.500    1.592 PER IMP=     .00
 *S ADD THE COMBINED FLOW FROM SUB-BASIN 60114.1 TO THE FLOW FROM SUB-BASIN 60115
 ADD HYD              E60115.1  2& 4   3        .35060       383.32       10.305       .55110    1.500    1.708
 *S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60115.1 THROUGH SUB-BASIN 60116
 ROUTE                E60115.5    3   11        .35060       381.50       10.305       .55111    1.550    1.700
 *S CALCULATE THE FLOW FROM SUB-BASIN 60116.
 *S BASIN 60116 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
 SEDIMENT BULK                                                                                                  PK BF =    1.15
 COMPUTE NM HYD       E60116   -     2        .13810       136.25        3.721       .50526    1.500    1.542 PER IMP=     .00
 *S ADD THE ROUTED FLOW FROM SUB-BASIN 60115.5 TO THE FLOW FROM SUB-BASIN 60116.
 ADD HYD              E60116.1 11& 2   3        .48870       513.17       14.026       .53815    1.550    1.641
 *S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60116.1 THROUGH SUB-BASIN 60117,
 *S TO THE HEAD OF THE SACATE BLANCO DIVERSION CHANNEL.
 ROUTE                E60116.5    3   11        .48870       419.23       14.027       .53816    1.600    1.340
 *S CALCULATE THE FLOW FROM SUB-BASIN 60117.
 *S BASIN 60117 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
 SEDIMENT BULK                                                                                                  PK BF =    1.15
 COMPUTE NM HYD       E60117   -     2        .03236        21.71         .872       .50526    1.600    1.048 PER IMP=     .00
 *S ADD THE ROUTED FLOW FROM SUB-BASIN 60116.5 TO THE FLOW FROM SUB-BASIN 60117
 ADD HYD              E60117.1 11& 2   3        .52106       440.94       14.898       .53611    1.600    1.322
 ROUTE RESERVOIR    TEMPPOND2    3    4        .52106       244.03       14.898       .53611    1.800     .732 AC-FT=    4.805
 *S
 *S OFFSITE FLOW AT EDGE OF RBSDP AREA                                          **
 *S
                                FROM  TO                    PEAK          RUNOFF                TIME TO    CFS       PAGE =    4
                    HYDROGRAPH  ID    ID         AREA      DISCHARGE      VOLUME      RUNOFF     PEAK      PER
 COMMAND        IDENTIFICATION  NO.   NO.      (SQ MI)      (CFS)        (AC-FT)    (INCHES)   (HOURS)   ACRE      NOTATION

 FINISH
(s10H
```

RIO BRAVO WATERSHED
AHYMO SUMMARY REPORT
EXISTING CONDITIONS

□(s16.66H□□□□□□□□□□□□

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =02/28/2000
INPUT FILE = P:\DRAINAGE\EXAHYMO\RB100E1B.DAT USER NO.= AHYMO-S-9702c3URSGrnr-AH

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
*S      RIO BRAVO WATERSHED
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S FILE NAME: RB100D1B.DAT  (EXISTING CONDITIONS)
*S BY: RICHARD STOCKTON  PEER REVIEW: D. DIXON
*S LAST REVISION: 05-14-96
*S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE RIO BRAVO
*S BASIN.  FLOWS FROM THIS BASIN IS CONVEYED TO HUBBLE LAKE DETENTION FACILITY
*S VIA THE HUBBLE LAKE/AMOLE DIVERSION CHANNEL.
*S THE RIO BRAVO MODEL WAS DEVELOPED BY AVID (AND ACCEPTED BY THE COUNTY).
*S
*S ANALYSIS ASSUMPTIONS:
*S 1. ALL LAND IN THIS BASIN IS MODELED AS DEVELOPED CONDITION AT 3 DU/AC.
*S
*S 2. THE PUNCH HYD COMMAND WAS ADDED TO THE END OF THIS FILE SO THE OUTFALL
*S    HYDROGRAPH COULD BE USED IN THE AMOLE DEL NORTE EXISTING CONDITIONS MODEL
*S    AA100E1B.DAT, WHICH WILL BE USED IN THE ANALYSIS OF THE AMOLE ARROYO SYSTE
*S
*S 3. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
*S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
*S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
*S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
*S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDEN
*S    DEVELOPMENTS.
*S
*S100 YEAR 24HR STORM EXISTING CONDITION
RAINFALL  TYPE= 2                                                    RAIN24=  2.660
*S
*S
*S
*S
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                        PK BF =  1.15
*S COMPUTE HYDROGRAPH FOR B-1
COMPUTE NM HYD        201.00   -     1        .02371        22.44        .639       .50526    1.500    1.479 PER IMP=    .00
*S
*S
```

```
*S
*S GENERATION OF SEDIMENT NOT LIKELY, NO BULKING FACTOR ADDED.
*S COMPUTE HYDROGRAPH FOR ROADWAY STA. 124+00 TO STA. 150+00
*S PAVEMENT WIDTH=76'
*S DO NOT ROUTE, SINCE ROADSIDE DITCHES CONVEY ROADWAY FLOW TO NEW CHANNEL
COMPUTE NM HYD        201.20   -     7        .00709        22.42       1.055      2.79133    1.500    4.943 PER IMP= 100.00
*S TOTAL RUNOFF FROM ROADWAY AND B-1
ADD HYD               201.30  1& 7   8        .03080        44.86       1.694      1.03138    1.500    2.276
*S
*S
*S
*S ROUTE B-1 THROUGH EXISTING ARROYO IN B-3
ROUTE                 201.40    1    2        .02371         7.68        .639       .50533    1.750     .506
*S
*S
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
*S										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
*S COMPUTE HYDROGRAPH FOR B-3										
COMPUTE NM HYD	202.00	-	3	.20470	162.28	5.516	.50526	1.550	1.239	PER IMP= .00
*S										
*S										
*S										
*S GENERATION OF SEDIMENT NOT LIKELY, NO BULKING FACTOR ADDED.										
*S COMPUTE HYDROGRAPH FOR ROADWAY STA. 150+00 TO STA. 206+00										
*S PAVEMENT WIDTH=76'										
COMPUTE NM HYD	202.20	-	1	.01526	48.26	2.272	2.79133	1.500	4.942	PER IMP= 100.00
*S TOTAL RUNOFF FROM ROADWAY AND B-3										
ADD HYD	202.30	1& 3	1	.21996	204.30	7.788	.66386	1.550	1.451	
*S										
*S										
*S										
*S ADD ROADWAY FLOW FROM STA. 124+00 TO STA. 150+00										
ADD HYD	202.40	1& 7	1	.22705	223.82	8.843	.73027	1.550	1.540	
*S TOTAL FLOW ENTERING NEW CHANNEL AT STA. 206+00										
ADD HYD	202.50	1& 2	1	.25076	228.91	9.482	.70900	1.550	1.426	
*S										
*S										
*S										
*S ROUTE TOTAL FLOW THROUGH B-5 IN NEW CHANNEL										
ROUTE	202.40	1	3	.25076	196.07	9.482	.70900	1.600	1.222	
*S										
*S										
*S										
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
*S COMPUTE HYDROGRAPH FOR B-5										
COMPUTE NM HYD	203.00	-	1	.32850	173.53	8.852	.50526	1.700	.825	PER IMP= .00
*S										
*S										
*S										
*S GENERATION OF SEDIMENT NOT LIKELY, NO BULKING FACTOR ADDED.										
*S COMPUTE HYDROGRAPH FOR ROADWAY STA. 206+00 TO STA. 274+00										
*S PAVEMENT WIDTH=76'										
COMPUTE NM HYD	203.20	-	2	.01854	55.55	2.760	2.79133	1.500	4.681	PER IMP= 100.00
*S TOTAL RUNOFF FROM ROADWAY AND B-5										
ADD HYD	203.40	1& 2	1	.34704	205.76	11.612	.62739	1.650	.926	
*S TOTAL DISCHARGE INTO AMOLE/HUBBELL DIVERSION CHANNEL										
*S HYD NO. RB100E1B.HYD IS ***** AP 43 *****										
ADD HYD	RB100E1B.HYD	1& 3	4	.59780	400.38	21.094	.66162	1.650	1.046	

```
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
*S COMPUTE HYDROGRAPH FOR B-2
COMPUTE NM HYD        204.00   -     2        .07540       71.81       2.032       .50526    1.500    1.488 PER IMP=     .00
*S ROUTE ADD BY LH - ROUTE B-2 THROUGH B-4
ROUTE                 202.40    2    3        .07540       49.70       2.032       .50528    1.600    1.030
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK                                                                    PK BF =    1.15
*S COMPUTE HYDROGRAPH FOR B-4
```

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	205.00	-	2	.19000	130.23	5.120	.50526	1.600	1.071	PER IMP= .00
*S ADD BASIN B-4 TO ROUTED FLOW										
ADD HYD	205.10	3& 2	3	.26540	179.94	7.152	.50526	1.600	1.059	
*S										
*S										
*S ROUTE ADD BY LH										
*S ROUTE FLOW TO HUBBLE THROUGH B-6										
ROUTE	202.40	3	5	.26540	118.39	7.152	.50527	1.750	.697	
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%										
SEDIMENT BULK										PK BF = 1.15
*S COMPUTE HYDROGRAPH FOR B-6										
COMPUTE NM HYD	206.00	-	1	.58100	238.38	15.656	.50526	1.750	.641	PER IMP= .00
*S ADD FLOW FROM B-6 TO ROUTED FLOW FROM B-4										
*S HYD NO. RB100E2B.HYD IS ***** AP 44 *****										
ADD HYD	RB100E2B.HYD	1& 5	3	.84640	356.77	22.808	.50526	1.750	.659	
*S										
FINISH										

(s10H

BORREGA WATERSHED
AHYMO SUMMARY REPORT
DEVELOPED CONDITIONS

```
(s16.66H
 AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =03/03/2000
 INPUT FILE = G:\DRAINAGE\DMPAHYMO\BORREGA.DAT                                        USER NO.= AHYMO-S-9702c3URSGrnr-AH

                                FROM  TO                    PEAK          RUNOFF                TIME TO    CFS       PAGE =   1
                    HYDROGRAPH   ID   ID         AREA      DISCHARGE     VOLUME       RUNOFF     PEAK      PER
 COMMAND          IDENTIFICATION  NO.  NO.      (SQ MI)     (CFS)       (AC-FT)     (INCHES)   (HOURS)   ACRE      NOTATION

 START                                                                                                  TIME=        .00
 *S
 *S      BORREGA WATERSHED
 *S
 *S
 *S 100-YR, 24-HR STORM
 *S FILE NAME: BR_DMP1.DAT  (Final Draft Submittal #3)
 *S BY: RICHARD STOCKTON
 *S LAST REVISION: 07-15-99 CORRECTED BASIN 50110 ADD HYD AND ROUTE RES.
 *S LH MADE POND LARGER AND DECREASED OUTFLOW.
 *S MODIFIED BY:  URSGWC
 *S DATE 2-26-2000
 *S ** NOTE **
 *S   RBSDP-DMP BASINS 21 AND 22 WILL BE DRAINED THROUGH THE BORREGA DAM FACILITY
 *S*************************************************************************
 *S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE BORREGA
 *S BASIN.  FLOWS FROM THIS BASIN IS CONVEYED TO HUBBLE LAKE DETENTION FACILITY
 *S VIA THE BORREGA DIVERSION CHANNEL.
 *S
 *S*************************************************************************
 *S ANALYSIS ASSUMPTIONS:
 *S*************************************************************************
 *S 1. ALL LAND IN THIS BASIN IS MODELED AS DEVELOPED CONDITION.  DEVELOPED
 *S    CONDITIONS ARE BASED ON LH'S RUNOFF CATAGPRY COLOR MAP.
 *S
 *S 2. THE PUNCH HYD COMMAND WAS ADDED TO THE END OF THIS FILE SO THE OUTFALL
 *S    HYDROGRAPH COULD BE USED IN THE AMOLE DEL NORTE DEVELOPED CONDITIONS MODEL
 *S    AA_DMP1.DAT, WHICH WILL BE USED IN THE ANALYSIS OF THE AMOLE ARROYO SYSTEM
 *S
 *S 3. BULKING FACTORS FOR THE ESCARPMENT EASEMENT UNDER DEVELOPED CONDITIONS,
 *S    HAVE BEEN REMOVED DUE TO BORREGA DETENTION BASIN IN THIS ALTERNATIVE.
 *S
 *S*************************************************************************
 *S100 YEAR 24HR STORM DEVELOPED CONDITION
 RAINFALL  TYPE= 2                                                                      RAIN24=   2.660
 *S*************************************************************************
 *S  LH BASIN NO. 50101
 COMPUTE NM HYD        101.10   -     1        .15400      310.44      12.024     1.46395    1.500    3.150 PER IMP=  42.00
 ROUTE                 201.10    1   10        .15400      259.16      12.024     1.46395    1.550    2.629
 ROUTE                 101.30   10    2        .15400      231.54      12.024     1.46395    1.650    2.349
 *S  LH BASIN NO. 50102
 COMPUTE NM HYD        102.10   -     1        .19530      365.72      16.639     1.59741    1.550    2.926 PER IMP=  49.00
```

```
 ADD HYD              102.30  1& 2   2        .34930       549.40       28.663      1.53857    1.600     2.458
 *S  LH BASIN NO. 50105 (EAST)
 COMPUTE NM HYD       105.10   -     1        .05210       110.96        4.439      1.59742    1.500     3.328 PER IMP=  49.00
 *S  LH BASIN NO. 50106
 COMPUTE NM HYD       106.10   -     3        .09702       191.49        8.266      1.59742    1.500     3.084 PER IMP=  49.00
 ADD HYD              106.30  1& 3   4        .14912       302.45       12.704      1.59741    1.500     3.169
 ROUTE                106.40   4     3        .14912       299.94       12.704      1.59742    1.550     3.143
 *S  LH BASIN NO. 50107
 COMPUTE NM HYD       107.10   -     1        .01146        24.42         .976      1.59741    1.500     3.329 PER IMP=  49.00
 ADD HYD              107.30  1& 3   3        .16058       321.72       13.681      1.59741    1.550     3.130
 ADD HYD              107.40  2& 3   2        .50988       864.62       42.343      1.55710    1.550     2.650
 ROUTE                107.50   2     3        .50988       685.48       42.343      1.55710    1.650     2.101
 *S  LH BASIN NO. 50108
 COMPUTE NM HYD       108.10   -     1        .21455       350.95       18.279      1.59742    1.600     2.556 PER IMP=  49.00
                                  FROM   TO                PEAK        RUNOFF                TIME TO    CFS       PAGE =   2
                     HYDROGRAPH   ID    ID       AREA     DISCHARGE    VOLUME      RUNOFF      PEAK      PER
 COMMAND        IDENTIFICATION    NO.   NO.    (SQ MI)     (CFS)      (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

 ADD HYD              108.30  1& 3   3        .72443      1005.15       60.622      1.56904    1.650     2.168
 *S  LH BASIN NO. 50109
 COMPUTE NM HYD       109.10   -     1        .19140       319.69       16.306      1.59742    1.550     2.610 PER IMP=  49.00
 ADD HYD              109.30  1& 3   3        .91583      1310.27       76.928      1.57497    1.600     2.235
 ROUTE                109.40   3     4        .91583      1309.38       76.928      1.57497    1.600     2.234
 ROUTE                109.50   4     3        .91583      1273.02       76.928      1.57497    1.650     2.172
 *S  LH BASIN NO. 50201
 COMPUTE NM HYD            B6   -     1        .34955       544.19       29.780      1.59741    1.600     2.433 PER IMP=  49.00
 *S  LH BASIN NO. 50110
 COMPUTE NM HYD       110.00   -     2        .05248       109.45        4.377      1.56380    1.500     3.259 PER IMP=  48.00
 ADD HYD              110.10  3& 2   2        .96831      1333.42       81.305      1.57436    1.650     2.152
 ADD HYD              110.20  2& 1   4       1.31786      1855.37      111.085      1.58048    1.650     2.200
 *S ROUTE FLOW THROUGH BORREGA POND QMAX=225 CFS AT INLET TO HUBBELL LAKE
 ROUTE RESERVOIR    BPOND.OUT    4    99      1.31786       162.97      111.163      1.58158    2.600      .193 AC-FT=   68.440
 *S HYD=BPOND.OUT IS *****AP 51*****
 ROUTE                110.30   99    4       1.31786       162.97      111.163      1.58158    2.950      .193
 *S  LH BASIN NO. 50111
 COMPUTE NM HYD       111.00   -     2        .05247       109.43        4.376      1.56381    1.500     3.259 PER IMP=  48.00
 ADD HYD          BR_DMP1.HYD  4& 2   2       1.37033       229.18      115.539      1.58090    1.550      .261
 *S HYD=BR_DMP1.HYD IS *****AP 52*****
 FINISH
(s10H
```

APPENDIX 5

AHYMO INPUT FILES

RBSDP MDP
AHYMO INPUT FILE
DEVELOPED CONDITIONS

```
                        DIST    EL      DIST    EL
                        0       105.5    4      100
                        14      100     18      105.5
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=500  S=0.028
ROUTE                   ID=11  HYD=D60116.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN 60117.
* BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=2  HYD=D60117  AREA=0.03236 SQ MI
                        A=3  B=21  C=7  D=69
                        TP=0.178   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=11  HYD=60117.1  I=11  II=2
PRINT HYD               ID=11  CODE=1


*  ROUTE FLOW SOUTH 650 FT IN 60" SD TO SACATE BLANCO CHANNEL
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= 0.01
                        DIA=5   N=.013
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=650  S=0.01
ROUTE                   ID=12  HYD=60117.3  INFLOW ID=11  DT=0.0
PRINT HYD               ID=12  CODE=1


* ROUTE FLOW 1400 FT EAST TO CHANNEL CROSSING IN SACATE BLANCO CHANNEL
* ASSUME A SOIL CEMENT CHANNEL
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=106
                        CS=0.012  FS=0.012  N=0.03  DIST=56
                        DIST    EL      DIST    EL
                        0       106     18      100
                        38      100     56      106
COMPUTE TRAVEL TIME     ID=13  RN=1  NVS=1  L=1400  S=0.012
ROUTE                   ID=13  HYD=SACBLANC.1  INFLOW ID=12  DT=0.0
PRINT HYD               ID=13  CODE=1
*
* CALC FLOW FROM 25 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=25  AREA=0.0287 SQ MI
                         a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=13  HYD=SACBLANC.2 I=2  II=13
PRINT HYD               ID=13  CODE=1


*CALC FLOW FROM 26 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=26  AREA=0.0508 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=13  HYD=SACBLANC.3  I=2 II=13
PRINT HYD               ID=13  CODE=1


*  ROUTE FLOW EAST 1375 FT TO CROSSING
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=106
                        CS=0.012  FS=0.012  N=0.03  DIST=56
                        DIST    EL      DIST    EL
                        0       106     18      100
                        38      100     56      106
COMPUTE TRAVEL TIME     ID=14  RN=1  NVS=1  L=1375  S=0.012
```

```
ROUTE                    ID=14  HYD=SACBLANC.4  INFLOW ID=13  DT=0.0
PRINT HYD                ID=14  CODE=1
*
*  CALC FLOW FROM 24 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=24  AREA=0.0301 SQ MI
                          a=0 b=25 c=20 d=55
                         TP=0.146   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=14 HYD=SACBLANC.5  I=2  II=14
PRINT HYD                ID=14  CODE=1
*
* ADD HYDROGRAPH FROM NORTH, NO. 21
ADD HYD                  ID=13  HYD=SACBLANC.5  I=21 II=14
*
*  CALC FLOW FROM 14 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=14  AREA=0.0350 SQ MI
                          a=0 b=25 c=20 d=55
                         TP=0.146   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=13 HYD=SACBLANC.6  I=13  II=2
PRINT HYD                ID=13  CODE=1

* ROUTE FLOW EAST 2400 FT IN SACATE BLANCO CHANNEL
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=106
                         CS=0.012  FS=0.012  N=0.03  DIST=56
                         DIST     EL      DIST     EL
                         0        106     18       100
                         38       100     56       106
COMPUTE TRAVEL TIME      ID=14  RN=1  NVS=1  L=2400  S=0.012
ROUTE                    ID=14  HYD=SACBLANC.7  INFLOW ID=13  DT=0.0
PRINT HYD                ID=14  CODE=1
*
*  CALC FLOW FROM 15 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=15  AREA=0.0473 SQ MI
                          a=0 b=25 c=20 d=55
                         TP=0.189   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=14  HYD= SACBLANC.8  I=14  II=2
PRINT HYD                ID=14  CODE=1


*
*  ROUTE FLOW 250 FT EAST
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=106
                         CS=0.012  FS=0.012  N=0.03  DIST=56
                         DIST     EL      DIST     EL
                         0        106     18       100
                         38       100     56       106
COMPUTE TRAVEL TIME      ID=15  RN=1  NVS=1  L=250  S=0.012
ROUTE                    ID=15  HYD=SACBLANC.11  INFLOW ID=14  DT=0.0
PRINT HYD                ID=15  CODE=1

* CALC FLOW FROM 16 AND ROUTE 1000 FT NORTH TO CHANNEL IN 36" SD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=16  AREA=0.0528 SQ MI
                         A=0  B=15  C=5  D=80
                         TP=0.270   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
```

```
COMPUTE RATING CURVE     CID=1  VN=1  CODE=-1  SLP= 0.005
                         DIA=3   N=.013
COMPUTE TRAVEL TIME      ID=10  RN=1  NVS=1  L=1000  S=0.005
ROUTE                    ID=10  HYD=60117.3  INFLOW ID=2  DT=0.0
PRINT HYD                ID=10  CODE=1

* ADD TO CHANNEL
ADD HYD                  ID=15  HYD=SACBLANC.111  I=10 II=15
PRINT HYD                ID=15 CODE=1


* CALC FLOW FROM 8 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=8  AREA=0.0189 SQ MI
                          a=0 b=25 c=20 d=55
                         TP=0.150   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=15  HYD= SACBLANC.12  I=15  II=2
PRINT HYD                ID=15  CODE=1
*
*  ROUTE FLOW 400 FT EAST
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=106
                         CS=0.012  FS=0.012  N=0.03  DIST=56
                         DIST    EL      DIST    EL
                         0       106     18      100
                         38      100     56      106
COMPUTE TRAVEL TIME      ID=22  RN=1  NVS=1  L=250  S=0.012
ROUTE                    ID=22  HYD=60117.14  INFLOW ID=15  DT=0.0
PRINT HYD                ID=22  CODE=1

*
* ADD THE AMOLE CHANNEL FLOW AND THE SACATE BLANCO FLOWS
ADD HYD                  ID=26  HYD= SACBLANC.12  I=26  II=22
PRINT HYD                ID=26  CODE=1

  ADD ROUTED FLOW FROM NORTH UNSER
ADD HYD                  ID=43 HYD=AMOL_SV.11 I=26 II=45
PRINT HYD                ID=43  CODE=1

**********************************************************************
*  EAST EDGE OF RBSDP AREA                                           *
**********************************************************************


* CALC FLOW FROM 17 AND ROUTE EAST 2000 FT 36" SD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=17  AREA=0.0281 SQ MI
                         a=0 b=25 c=20 d=55
                         TP=0.153   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1

COMPUTE RATING CURVE     CID=1  VN=1  CODE=-1 SLP=0.015
                         DIA=3  N=.013
COMPUTE TRAVEL TIME      ID=23  RN=1  NVS=1  L=1300  S=0.015
ROUTE                    ID=23  HYD=17.1  INFLOW ID=2  DT=0.0
PRINT HYD                ID=23  CODE=1


* CALC FLOW FROM 18
* BASIN 18 WILL EXERCISE THE DIRECT ENTRY TO GUAC BASIN OPTION
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=24  HYD=18  AREA=0.0358 SQ MI
                         A=0  B=20  C=0  D=80
                         TP=0.284   MASSRAIN=-1
```

```
PRINT HYD               ID=24  CODE=1
*
*
*S
*#############################################################################
*S  RIO BRAVO BASIN
*#############################################################################
*S
* RIO BRAVO BASIN
*********************************************************
* ADD BASINS FROM SOUTH POWERLINE DIVERSION             *
* TO THE RIO BRAVO RUN.  S. POWELINE BASINS ARE ROUTED  *
* THROUGH A SERIES OF PONDS.                            *
*********************************************************
*
* CALCULATE THE FLOW FROM SUB-BASIN A60104.
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=A60104  AREA=0.1172 SQ MI
                        A=0  B=41  C=19  D=40
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
ROUTE RESERVOIR         ID=10 HYD=POND1.OUT I=2 CODE=10
                        Q-OUT   STORE   ELEV
                        0         0      10
                        10        2      11
                        17.6      4      12
                        25.0      8      13
PRINT HYD               ID=10  CODE=1
*
* ROUTE FLOWS TO POND 2
COMPUTE RATING CURVE    CID=1  VS NO=1  CODE=-1
                        SLP=0.015 D=2.0 N=0.013
COMPUTE TRAVEL TIME     ID=10  REACH NO=1  NO VS=1  L=2000 FT
                        SLP=0.015
ROUTE                   OUTFLOW ID=11  OUTFLOW HYD=POND1.ROUTE
                        INFLOW ID=10  DT=0.0
PRINT HYD               ID=11 CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60106
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=1  HYD=A60106  AREA=0.0480 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=1  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60107A
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=A60107A  AREA=0.0313 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
ADD HYD                 ID=3  HYD=A60107A.1  I=1  II=2
PRINT HYD               ID=3  CODE=1
*
* ROUTE THE COMBINED FLOW FROM SUB-BASIN A60107A.
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=103.0 FT
                        CH SLP=.03  FP SLOPE=.03
                        N=-.03  DIST=29
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       103:0   12.0    100.0   17.0    100.0
                        29.0    103.0
```

```
COMPUTE TRAVEL TIME      ID=12  REACH NO=1  NO VS=1  L=600 FT
                         SLP=.03
ROUTE                    OUTFLOW ID=12  OUTFLOW HYD=6107.5
                         INFLOW ID=3  DT=0.0
PRINT HYD                ID=12 CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60108
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=1  HYD=A60108  AREA=0.0924 SQ MI
                         A=0  B=48 C=17  D=35
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
*
* ROUTE FLOW FROM SUB-BASIN A60108 THROUGH SUB-BASIN A60109 TO POND 2
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                         CS=0.05  FS=0.05  N=0.03  DIST=28
                         DIST    EL      DIST    EL
                         0       104     4       100
                         24      100     28      104
COMPUTE TRAVEL TIME      ID=10  RN=1  NVS=1  L=800  S=0.05
ROUTE                    ID=10  HYD=A60108.5  INFLOW ID=1  DT=0.0
PRINT HYD                ID=10  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60109
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=A60109  AREA=0.0414 SQ MI
                         A=0  B=28  C=23  D=49
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN A60107A.5 TO THE FLOW FROM SUB-BASIN A60104.5
ADD HYD                  ID=11  HYD=POND2.A1  I=11  II=12
PRINT HYD                ID=11  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN POND2.A1 TO THE FLOW FROM SUB-BASIN A60108.5
ADD HYD                  ID=11  HYD=POND2.A2  I=11  II=10
PRINT HYD                ID=11  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN POND2.A2 TO THE FLOW FROM SUB-BASIN A60109
* HYD=POND2.IN IS THE TOTAL INFLOW INTO POND 2.
ADD HYD                  ID=11  HYD=POND2.IN  I=11  II=2
PRINT HYD                ID=11  CODE=1
*
* ROUTE FLOW THROUGH POND 2
ROUTE RESERVOIR      ID=20 HYD=POND2.OUT I=11 CODE=10
                        Q OUT   STORE    ELEV
                         0              0      10
                         22.2         2      11
                         49.4         4      11.5
                         89.2         7      12
                        143.5      10      12.5
PRINT HYD                ID=20 CODE=1
*
* ROUTE FLOWS TO POND 3
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                         CS=0.005  FS=0.005  N=0.03  DIST=29
                         DIST    EL      DIST    EL
                         0       104     12       100
                         17      100     29      104
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=800  S=0.005
ROUTE                    ID=11  HYD=POND2.ROUTE  INFLOW ID=20  DT=0.0
PRINT HYD                ID=11  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60110
COMPUTE NM HYD           ID=1  HYD=A60110  AREA=0.1046 SQ MI
```

```
                        A=0   B=40 C=19  D=41
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=1  CODE=1
*
* ROUTE FLOW FROM SUB-BASIN A60110 THROUGH SUB-BASIN A60111 TO POND 3
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.053  FS=0.053  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1700  S=0.053
ROUTE                   ID=10  HYD=A60110.5  INFLOW ID=1  DT=0.0
PRINT HYD               ID=10  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60111
COMPUTE NM HYD          ID=1  HYD=A60111  AREA=0.0384 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=1  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN A60110.5 TO THE FLOW FROM SUB-BASIN A60111.
ADD HYD                 ID=11  HYD=POND3.A1  I=11  II=10
PRINT HYD               ID=11  CODE=1
*
* ADD THE ROUTED FLOW FROM POND2.ROUTE TO THE FLOW FROM SUB-BASIN A60111.
* HYD=POND3.IN IS THE TOTAL INFLOW INTO POND 3.
ADD HYD                 ID=10 HYD=POND3.IN  I=11  II=1
PRINT HYD               ID=10  CODE=1
*
* ROUTE FLOW THROUGH POND 3
ROUTE RESERVOIR     ID=30 HYD=POND3.OUT I=10 CODE=10
                        Q OUT   STORE    ELEV
                        0          0      10
                        39.1       1      11
                        82.0       3      11.5
                        141.1      5      12
                        217.8      8        12.5
PRINT HYD              ID=30 CODE=1
*
* ROUTE FLOWS TO POND 4
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.005  FS=0.005  N=0.03  DIST=34
                        DIST    EL      DIST    EL
                        0       104     12       100
                        22      100     34      104
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=500  S=0.005
ROUTE                   ID=10  HYD=POND3.ROUTE  INFLOW ID=30  DT=0.0
PRINT HYD               ID=10  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60113
COMPUTE NM HYD          ID=1  HYD=A60113  AREA=0.0580 SQ MI
                        A=0  B=29 C=23  D=48
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=1  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60116N
COMPUTE NM HYD          ID=2  HYD=A60116N  AREA=0.0381 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
* ADD THE ROUTED FLOW FROM POND 3.ROUTE TO THE FLOW FROM SUB-BASIN A60113.
ADD HYD                 ID=10  HYD=POND4.A1  I=10  II=1
PRINT HYD               ID=10  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN POND3.A1 TO THE FLOW FROM SUB-BASIN A60116N
* HYD=POND2.IN IS THE TOTAL INFLOW INTO POND 2.
```

```
ADD HYD                 ID=10  HYD=POND4.IN  I=10  II=2
PRINT HYD               ID=10  CODE=1
*
* ROUTE FLOW THROUGH POND 4
ROUTE RESERVOIR         ID=40 HYD=POND4.OUT I=10 CODE=10
                        Q OUT   STORE    ELEV
                        0              0      10
                        39.1         1      11
                        82.0         3      11.5
                        141.1       5      12
                        217.8       8     12.5
                        313.4      10     13
PRINT HYD              ID=40 CODE=1
*
* ROUTE FLOWS TO POND 5
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.005  FS=0.005  N=0.03  DIST=34
                        DIST    EL      DIST    EL
                        0       104     12       100
                        22      100     34      104
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=450  S=0.005
ROUTE                   ID=10  HYD=POND4.ROUTE  INFLOW ID=40  DT=0.0
PRINT HYD               ID=10  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60114
COMPUTE NM HYD          ID=1  HYD=A60114  AREA=0.2162 SQ MI
                        A=0  B=46  C=17  D=37
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=1  CODE=1
*
* ROUTE FLOW FROM SUB-BASIN A60114 THROUGH SUB-BASIN A60116S TO POND 5.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.046  FS=0.046  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=700  S=0.046
ROUTE                   ID=11  HYD=A60114.5  INFLOW ID=1  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60115
COMPUTE NM HYD          ID=2  HYD=A60115  AREA=0.0764 SQ MI
                        A=0  B=32  C=21  D=47
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
* ROUTE FLOW FROM SUB-BASIN A60115 THROUGH SUB-BASIN A60116S TO POND 5.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.044  FS=0.044  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=900  S=0.044
ROUTE                   ID=12  HYD=A60115.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=12  CODE=1
*
* CALCULATE THE FLOW FROM SUB-BASIN A60116S
COMPUTE NM HYD          ID=1  HYD=A60116S  AREA=0.0244 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=1  CODE=1
*
* ADD THE ROUTED FLOW FROM POND4.ROUTE TO THE FLOW FROM SUB-BASIN A60114.5
ADD HYD                 ID=10  HYD=POND5.A1  I=10  II=11
PRINT HYD               ID=10  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN POND5.A1 TO THE FLOW FROM SUB-BASIN A60115.5
```

```
ADD HYD                 ID=10  HYD=POND5.A2  I=10  II=12
PRINT HYD               ID=10  CODE=1
*
* ADD THE ROUTED FLOW FROM SUB-BASIN POND5.A2 TO THE FLOW SUB-BASIN A60116S.5
* HYD=POND5.IN IS THE TOTAL INFLOW INTO POND 5.
ADD HYD                 ID=10  HYD=POND5.IN  I=10  II=1
PRINT HYD               ID=10  CODE=1
*
* ROUTE FLOW THROUGH POND 5
ROUTE RESERVOIR         ID=50 HYD=POND5.OUT I=10 CODE=10
                        Q OUT   STORE    ELEV
                        0              0      10
                        39.1         1      11
                        82.0         3      11.5
                        141.1       5      12
                        217.8      7     12.5
                        313.4      9     13
                        429.3      11     13.5
PRINT HYD              ID=50 CODE=1
*
* ROUTE FLOWS TO POND 6
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.005  FS=0.005  N=0.03  DIST=34
                        DIST    EL      DIST    EL
                        0       104     12       100
                        22      100     34      104
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=900  S=0.005
ROUTE                   ID=10  HYD=POND5.ROUTE  INFLOW ID=50  DT=0.0
PRINT HYD               ID=10  CODE=1


* COMPUTE HYDROGRAPH FOR B-1 RIO BRAVO
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=1  HYD NO=201.0  DA=0.0308 SQ MI
                        %A=0.0  %B=33.0  %C=33.0  %D=34.0
                        TP=0.1333 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*
* ROUTE B-1 THROUGH B-3.  ASSUME LINED CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.045  FP SLOPE=.045
                        N=-.013  DIST=25.5
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   17.0    100.0
                        29.0    106.0
COMPUTE TRAVEL TIME     ID=11  REACH NO=1  NO VS=1  L=2800 FT
                        SLP=.045
ROUTE                   OUTFLOW ID=11  OUTFLOW HYD=201.5
                        INFLOW ID=1  DT=0.0
PRINT HYD               ID=11 CODE=1
*
* COMPUTE HYDROGRAPH FOR B-3 (WEST) FROM RIO BRAVO.  REDUCE AREA TO 60 AC.
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=1  HYD NO=203.0  DA=0.0938 SQ MI
                        %A=0.0  %B=33.0  %C=33.0  %D=34.0
                        TP=0.1333 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*
* ADD THE ROUTED FLOWS FROM SUB-BASIN 201.5 TO THE FLOWS FROM SUB-BASIN 203
ADD HYD                 ID=11 HYD=203.1  ADD ID=1 TO ID=11
PRINT HYD               ID=11 CODE=1
*
```

```
* ADD THE ROUTED FLOW FROM POND 5.ROUTE TO THE FLOW FROM SUB-BASIN 201.5
ADD HYD                 ID= 11 HYD=POND6.IN I=10 II=11
PRINT HYD               ID=11 CODE=1
*
* ROUTE FLOW THROUGH POND 6
ROUTE RESERVOIR         ID=60 HYD=POND6.OUT I=11 CODE=10
                        Q OUT   STORE    ELEV
                        0              0      10
                        39.1         1      11
                        82.0         3      11.5
                        141.1       5      12
                        217.8       7     12.5
                        313.4       9     13
                        429.3       11   13.5
PRINT HYD              ID=60 CODE=1
*
* ROUTE FLOWS TO POND 6
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.005  FS=0.005  N=0.03  DIST=34
                        DIST    EL      DIST    EL
                        0       104     12       100
                        22      100     34      104
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=600  S=0.005
ROUTE                   ID=10  HYD=POND6.ROUTE  INFLOW ID=60  DT=0.0
PRINT HYD               ID=10  CODE=1
*
**********************************************************
*
* COMPUTE FLOWS FROM SUB-BASIN B-2 OF RIO BRAVO
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=1  HYD NO=202.0  DA=0.0754 SQ MI
                        %A=0  %B=33  %C=33  %D=34
                        TP=0.1333 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*
* ROUTE FLOWS TO POND 8
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=0.0386  FP SLOPE=0.0386
                        N=0.030  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=11  REACH NO=2  NO VS=1  L=3200 FT
                        SLP=0.0386
ROUTE                   OUTFLOW ID=11  OUTFLOW HYD=202.5
                        INFLOW ID=1  DT=0.0
PRINT HYD               ID=11 CODE=1
*
* COMPUTE HYDROGRAPH FOR B-4 (WEST) FROM RIO BRAVO REDUCE AREA TO 41 AC
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=1  HYD NO=204.0  DA=0.0641 SQ MI
                        %A=0  %B=33  %C=33  %D=34
                        TP=0.1333 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*
* ADD THE ROUTED FLOWS FROM SUB-BASIN 202.5 TO THE FLOWS FROM SUB-BASIN 204
ADD HYD                 ID=11  HYD=204.1  I=1  II=11
PRINT HYD               ID=11  CODE=1
*
* COMPUTE FLOWS FROM SUB-BASIN 50103 FROM BORREGA
COMPUTE NM HYD          ID=1 HYD=103 DA=0.054 SM
                        A=0 B=53 C=15 D=32
```

```
                        TP=.1333 HR RAIN=-1
PRINT HYD               ID=1 CODE=10
*
* ROUTE FLOWS TO POND 7
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=0.0482  FP SLOPE=0.0482
                        N=0.030  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=12  REACH NO=2  NO VS=1  L=2800 FT
                        SLP=0.0482
ROUTE                   OUTFLOW ID=12  OUTFLOW HYD=103.5
                        INFLOW ID=1  DT=0.0
PRINT HYD               ID=12 CODE=1
*
* COMPUTE FLOWS FROM SUB-BASIN 50104 FROM BORREGA
COMPUTE NM HYD          ID=1 HYD=104 DA=0.0393 SM
                        A=0 B=48 C=17 D=35
                        TP=.1333 HR RAIN=-1
PRINT HYD               ID=1 CODE=10
*
* ROUTE FLOWS TO POND 7
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=0.045  FP SLOPE=0.045
                        N=0.030  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=13  REACH NO=2  NO VS=1  L=2000 FT
                        SLP=0.045
ROUTE                   OUTFLOW ID=13  OUTFLOW HYD=104.5
                        INFLOW ID=1  DT=0.0
PRINT HYD               ID=13 CODE=1
*
* ADD THE ROUTED FLOWS FROM SUB-BASIN 50103.5 TO THE ROUTED FLOWS
*  FROM SUB-BASIN 50104.5
ADD HYD                 ID=12  HYD=104.6  I=12  II=13
PRINT HYD               ID=12  CODE=1
*
* COMPUTE FLOWS FROM SUB-BASIN 50105 (WEST) FROM BORREGA
* REDUCE AREA TO 81 AC.
COMPUTE NM HYD          ID=1 HYD=105 DA=0.1266 SM
                        A=0 B=28 C=23 D=49
                        TP=.1333 HR RAIN=-1
PRINT HYD               ID=1 CODE=10
*
* ADD THE ROUTED FLOWS FROM SUB-BASIN 50105 (WEST) TO THE ROUTED FLOWS
*  FROM SUB-BASIN 50104.6

ADD HYD                 ID=12  HYD=POND7.IN  I=1  II=12
PRINT HYD               ID=12  CODE=1
*
* ROUTE FLOWS THROUGH POND 7
ROUTE RESERVOIR         ID=70 HYD=POND7.OUT I=12 CODE=10
                        Q OUT   STORE    ELEV
                        0         0       10
                        39.7      3       11
                        48.6      6       11.5
                        56.2      9       12
                        62.8      12       12.5
                        68.8      15       13
PRINT HYD               ID=70 CODE=1
*
* ROUTE FLOWS TO POND 8
```

```
COMPUTE RATING CURVE     CID=1  VS NO=1  CODE=-1
                         SLP=0.01 D=3.0 N=0.013
COMPUTE TRAVEL TIME      ID=12  REACH NO=1  NO VS=1  L=400 FT
                         SLP=0.01
ROUTE                    OUTFLOW ID=12  OUTFLOW HYD=POND7.ROUTE
                         INFLOW ID=70  DT=0.0
PRINT HYD                ID=12 CODE=1
*
* ADD THE FLOW FROM SUB-BASIN 204.1 TO THE FLOW FROM POND7.ROUTE
ADD HYD                  ID=11 HYD=POND8.IN I=11 II=12
PRINT HYD                ID=11 CODE=10
*
* ROUTE FLOWS THROUGH POND 8
ROUTE RESERVOIR          ID=80 HYD=POND8.OUT I=11 CODE=10
                         Q OUT   STORE    ELEV
                         0          0      10
                         39.7     3      11
                         48.6     6      11.5
                         56.2     9      12
                         62.8     12      12.5
                         68.8     15      13
PRINT HYD                ID=80 CODE=1
*
* ROUTE FLOWS TO JUNCTION
COMPUTE RATING CURVE     CID=1  VS NO=1  CODE=-1
                         SLP=0.01 D=3.0 N=0.013
COMPUTE TRAVEL TIME      ID=11  REACH NO=1  NO VS=1  L=600 FT
                         SLP=0.01
ROUTE                    OUTFLOW ID=11  OUTFLOW HYD=POND8.ROUTE
                         INFLOW ID=80  DT=0.0
PRINT HYD                ID=11 CODE=1
*
* ADD THE FLOWS FROM POND6.ROUTE TO THE FLOWS FROM POND8.ROUTE
* AT THE JUNCTION POINT
ADD HYD                  ID=11 HYD=JUNCTION I=11 II=10
PRINT HYD                ID=11 CODE=10
*
* ROUTE THE FLOWS FROM THE JUNCTION POINT TO THE RIO BRAVO CHANNEL
COMPUTE RATING CURVE     CID=1  VS NO=1  NO SEGS=1
                         MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                         CH SLP=.025  FP SLOPE=.025
                         N=-.013  DIST=25.5
                         DIST    ELEV    DIST    ELEV    DIST    ELEV
                         0       106.0   12.0    100.0   17.0    100.0
                         29.0    106.0
COMPUTE TRAVEL TIME      ID=12  REACH NO=2  NO VS=1  L=6000 FT
                         SLP=.025
ROUTE                    OUTFLOW ID=12  OUTFLOW HYD=202.2
                         INFLOW ID=11  DT=0.0
PRINT HYD                ID=12 CODE=1

* COMPUTE THE FLOW FROM SUB-BASIN B-3 (EAST) FROM RIO BRAVO
COMPUTE NM HYD           ID=1  HYD NO=203.0  DA=0.1289 SQ MI
                         %A=0.0  %B=33.0  %C=33.0  %D=34.0
                         TP=0.1333 HR
                         MASS RAINFALL=-1
PRINT HYD                ID=1 CODE=1
*
* ROUTE FLOWS FROM 203.0 IN A LOCAL POND CALLED POND 9
ROUTE RESERVOIR          ID=90 HYD=POND9.OUT I=1 CODE=10
                         Q-OUT   STORE   ELEV
                         0          0      10
                         39.7     3      11
                         48.6     6      11.5
                         56.2     9      12
PRINT HYD                ID=90  CODE=1
*
```

```
*
* ADD THE FLOW FROM POND9.OUT TO THE FLOW FROM SUB-BASIN 202.2
* THIS IS THE TOTAL FLOW INTO THE RIO BRAVO CHANNEL
ADD HYD                 ID=99 HYD=CHANNEL.IN I=12 II=90
PRINT HYD               ID=99 CODE=10


*#############################################################
*# CALC FLOWS FROM B-5 AND ROUTE SOUTH IN ASSUMED 32' STREET #
*#############################################################
COMPUTE NM HYD          ID=2  HYD NO=B-5  DA=0.0997 SQ MI
                        A=0.0  B=33.0  C=33.0  D=34.0
                        TP=0.17 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1

COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=0  MAX EL=.67
                        CS=0.028  FS=0.028  N=0.017  DIST=16
                        DIST    EL      DIST    EL
                        0       .67       0.1   0
                        15.9    .39       16    .67
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1000  S=0.028
ROUTE                   ID=10  HYD=B-5.1 INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1

* ADD TO POND
ADD HYD                ID=10   HYD=RIOCHNL.1   I=10  II=99


* ROUTE FLOW EAST 800 FT TO INTERSECTION IN RIO BRAVO CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.025  FP SLOPE=.025
                        N=-.013  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=12  REACH NO=2  NO VS=1  L=800 FT
                        SLP=.025
ROUTE                   ID=20  HYD=RIOCHNL.2  INFLOW ID=10  DT=0.0
PRINT HYD               ID=20  CODE=1

* CALC FLOW FROM 23 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD NO=23  DA=0.03383 SQ MI
                        A=0  B=25  C=20  D=55
                        TP=0.133 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
ADD HYD                 ID=20  HYD=RIOCHNL.3  I=20 I=2
*
* ROUTE COMBINED FLOW EAST 525 FT TO 98TH STREET CROSSING
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.025  FP SLOPE=.025
                        N=-.013  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=21  REACH NO=2  NO VS=1  L=525  SLP=.025
ROUTE                   ID=21  HYD=RIOCHNL.3  INFLOW ID=20  DT=0.0
PRINT HYD               ID=21  CODE=1

*  CALC FLOW FROM ZGARCIA 1 (WEST) OF 98 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
```

```
COMPUTE NM HYD          ID=2  HYD NO=ZG1  DA=0.0199 SQ MI
                        A=0  B=25  C=20  D=55
                        TP=0.146HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
ADD HYD                 ID=20  HYD=RIOCHNL.3  I=21 I=2

* CALC FLOW FROM B-4 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1   BK=1.06
* COMPUTE HYDROGRAPH FOR B-4 (EAST) FROM RIO BRAVO REDUCE AREA TO 50.1 AC
COMPUTE NM HYD          ID=2  HYD NO=B-4 DA=0.0783 SQ MI
                        A=0  B=33  C=33  D=34
                        TP=0.1333 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1

ADD HYD                 ID=20  HYD=B-4.2  I=2  II=20


* ROUTE FLOW 600 FT, CALC FLOW FROM Z GARCIA 2 (EAST) AND ADD TO CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.025  FP SLOPE=.025
                        N=-.013  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=21  REACH NO=2  NO VS=1  L=600  SLP=.025
ROUTE                   ID=21  HYD=RIOCHNL.3  INFLOW ID=20  DT=0.0
PRINT HYD               ID=21  CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD NO=ZG2  DA=0.002077 SQ MI
                        A=0  B=25  C=20  D=55
                        TP=0.133HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1

ADD HYD                 ID=20 HYD=RIOCHNL.4  I=21 I=2
PRINT HYD               ID=20 CODE=1

* ROUTE FLOW 1200 FT EAST, CALC FLOW FROM ASW1 AND ADD TO CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.025  FP SLOPE=.025
                        N=-.013  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=21  REACH NO=2  NO VS=1  L=1200  SLP=.025
ROUTE                   ID=21  HYD=RIOCHNL.5  INFLOW ID=20  DT=0.0
PRINT HYD               ID=21  CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD NO=ASW1  DA=0.04422 SQ MI
                        A=0  B=25  C=20  D=55
                        TP=0.133HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
ADD HYD                 ID=20  HYD=RIOCHNL.6 I=21 I=2
PRINT HYD               ID=20 CODE=1

*  ROUTE FLOW 1050 FT EAST, CALC FLOWS FROM ZG3, JM1, DL1, LP1, JM2
*   AND ADD TO CHANNEL
```

```
COMPUTE RATING CURVE     CID=1  VS NO=1  NO SEGS=1
                         MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                         CH SLP=.025  FP SLOPE=.025
                         N=-.013  DIST=34
                         DIST    ELEV    DIST    ELEV    DIST    ELEV
                         0       106.0   12.0    100.0   22.0    100.0
                         34.0    106.0
COMPUTE TRAVEL TIME      ID=21  REACH NO=2  NO VS=1  L=1050  SLP=.025
ROUTE                    ID=21  HYD=RIOCHNL.7  INFLOW ID=20  DT=0.0
PRINT HYD                ID=21  CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD NO=ZG3  DA=0.00821 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.157 HR
                         MASS RAINFALL=-1
PRINT HYD                ID=2 CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=3  HYD NO=JM1  DA=0.00798 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.157 HR
                         MASS RAINFALL=-1
PRINT HYD                ID=3 CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=4  HYD NO=DL1  DA=0.00786 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.160 HR
                         MASS RAINFALL=-1
PRINT HYD                ID=4 CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=5  HYD NO=LP1  DA=0.00809 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.154 HR
                         MASS RAINFALL=-1
PRINT HYD                ID=5 CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=6  HYD NO=JM2  DA=0.00802 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.239HR
                         MASS RAINFALL=-1
PRINT HYD                ID=6 CODE=1

ADD HYD                  ID=20  HYD=RIOCHNL.8  I=21  II=2
PRINT HYD                ID=20 CODE=1
ADD HYD                  ID=20  HYD=RIOCHNL.9  I=20  II=3
PRINT HYD                ID=20 CODE=1
ADD HYD                  ID=20  HYD=RIOCHNL.11  I=20  II=4
PRINT HYD                ID=20 CODE=1
ADD HYD                  ID=20  HYD=RIOCHNL.12  I=20  II=5
PRINT HYD                ID=20 CODE=1
ADD HYD                  ID=20  HYD=RIOCHNL.13  I=20  II=6
PRINT HYD                ID=20 CODE=1
```

```
* ROUTE FLOW 1100 FT EAST , CALC FLOW FROM ASW2 AND ADD TO CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.025  FP SLOPE=.025
                        N=-.013  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=21  REACH NO=2  NO VS=1  L=1100  SLP=.025
ROUTE                   ID=21  HYD=RIOCHNL.14  INFLOW ID=20  DT=0.0
PRINT HYD               ID=21  CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD NO=ASW2  DA=0.03856 SQ MI
                        A=0  B=25  C=20  D=55
                        TP=0.152 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
ADD HYD                 ID=20  HYD= RIOCHNL.15 I=21 II=2


* CALC FLOW FROM 20 AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD NO=20 DA=0.0290 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.140 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
ADD HYD                 ID=20 HYD=20.1  I=20 II=2
PRINT HYD               ID=20 CODE=1

* ROUTE FLOW 450 FT EAST TO HUBBEL CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=.025  FP SLOPE=.025
                        N=-.013  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=41  REACH NO=2  NO VS=1  L=450  SLP=.025
ROUTE                   ID=41  HYD=RIOCHNL.16  INFLOW ID=20  DT=0.0

PRINT HYD               ID=41  CODE=1


**************************************************************************
*S SOUTH RIO BRAVO
**************************************************************************


* THE REMAINING AREA OF B-6 IN RIO BRAVO BASIN WILL DRAIN TO S. RIO BRAVO
* CHANNEL
* CALC FLOW FROM B-6 EAST OF DEVELOPED AREA AND ADD TO HUBBELL LAKE
* AREA SOUTH OF DEVELOPED AREA WILL DRAIN TO BORREGA DAM FACILITY CURRENTY
* UNDER DESIGN BY WILSON & CO.
* BASINS 21 & 22 OF RBSDP WILL DRAIN TO BORREGA DAM AS PER CONTRACTUAL AGGREMENT
* THE BORREGA AHYMO HAS BEEN INCLUDED.
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD           ID=42  HYD=B-6 SOUTH  AREA=0.2656 SQ MI
                         A=0  B=25  C=4   D=71
                         TP=0.181  HR  MASSRAIN=-1
PRINT HYD                ID=42  CODE=1
```

```
*******************************************************************************
*******************************************************************************
*S
*S BEGIN ROUTE TO HUBBELL LAKE
*s
* BRING FLOWS FROM AMOLE-SNOW VISTA, SACATE BLANCO AND N. RIO BRAVO SOUTH
* TO HUBBELL LAKE


* BASIN 35301
COMPUTE NM HYD          ID=2  HYD=D35301  AREA=0.1420  SQ MI
                        A=0  B=25  C=4   D=71
                        TP=0.181  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


* ROUTE THE FLOW FROM BASIN 35301 TO 35303
COMPUTE RATING CURVE    CID=1  VN=1 CODE=-1 S=0.02 D=5 N=0.013
COMPUTE TRAVEL TIME     ID=5 REACH=1 VS=1 L=1300 S=0.02
ROUTE                   ID=5 HYD=D35301.5  ID IN=2 DT=0.0
PRINT HYD               ID=5  CODE=1


* BASIN 35303
COMPUTE NM HYD          ID=2  HYD=D35303  AREA=0.0964  SQ MI
                        A=0  B=17  C=2  D=81
                        TP=0.158  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


* ADD THE ROUTED FLOW FROM BASIN 35301.5 TO THE FLOW FROM BASIN 35303
ADD HYD                 ID=2  HYD=D35303.1 I=2 II=5
PRINT HYD               ID=2  CODE=1


* ROUTE THE FLOW FROM BASIN 35303 TO THE AMOLE ARROYO
COMPUTE RATING CURVE    CID=1  VN=1 CODE=-1 S=0.02 D=6.0 N=0.013
COMPUTE TRAVEL TIME     ID=5 REACH=1 VS=1 L=1300 S=0.02
ROUTE                   ID=5 HYD=D35303.5  ID IN=2 DT=0.0
PRINT HYD               ID=5  CODE=1


* BASIN 35305
COMPUTE NM HYD          ID=2  HYD=D35305  AREA=0.0841 SQ MI
                        A=0  B=19  C=0  D=81
                        TP=0.178  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


* ADD THE ROUTED FLOW FROM BASIN 35303.5 TO THE FLOW FROM BASIN 35305
ADD HYD                 ID=11 HYD=D35305.1 I=2 II=5
PRINT HYD               ID=11  CODE=1


* ADD THE FLOW FROM BASIN 35305 TO THE FLOW IN THE AMOLE ARROYO
ADD HYD                 ID=43 HYD=D35305.2 I=43 II=11
PRINT HYD               ID=43 CODE=1


* ROUTE COMBINED FLOW IN THE AMOLE ARROYO TO THE AMOLE DETENTION FACILITY.
* LH HYD NO. 00110.5 IS ***** AP 04 ***** WITH UNSER EXTENSION SD
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=108
                        CS=0.0162  FS=0.0162  N=0.03  DIST=120
                        DIST    EL      DIST    EL
                        0       108     30      106
                        50      100     80      100  120  108
COMPUTE TRAVEL TIME     ID=44  RN=1  NVS=1  L=700  S=0.0162
```

```
ROUTE                    ID=44  HYD=00110.5  INFLOW ID=43  DT=0.0
PRINT HYD                ID=44  CODE=1


*  RECALL THE OUTFLOW HYDROGRAPH FROM THE AMOLE DEL NORTE WATERSHED
*******************************************************************************
***  INSERT AMOLE DEL NORTE PUNCH HYD HERE... ***
*******************************************************************************

* IMPORTANT NOTE4: ROUTE RESERVOIR DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  AMOLE DEL NORTE. THEREFORE, ADD ** 3.1 AC.FT ** OF VOLUME
*                  TO THE AFFECTED HYDROGRAPHS PUBLISHED IN THIS RUN.
*                  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*                  TRUNCATED FROM THE SNOW VISTA ALTERNATIVE. THE TOTAL
*                  TRUNCATED VOLUME TO THIS POINT IS 430.7 AC FT
*
RECALL HYD           ID=30  HYD=AN_DMP.HYD
                     DT=  .050000 HRS   DA=   6.2424 SQ MI
                     PEAK=   2347.390CFS  RO= 1.8058 INCHES  NO PTS=600
                     FLOW RATES
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .108      1.717
                          9.239     29.244     74.437    177.248    383.326
                        697.282   1051.008   1326.001   1520.663   1701.038
                       1873.349   2007.858   2103.365   2171.674   2203.447
                       2228.242   2281.980   2338.371   2347.390   2302.423
                       2226.295   2132.756   2024.678   1905.010   1782.810
                       1665.173   1556.311   1465.220   1395.130   1340.593
                       1296.542   1259.875   1229.156   1203.143   1180.025
                       1158.261   1137.635   1116.751   1092.789   1064.611
                       1032.532    998.083    963.139    929.180    897.036
                        866.795    837.283    809.394    783.969    759.837
                        735.463    709.434    682.722    657.050    632.671
                        609.432    587.601    568.148    552.131    539.555
                        530.048    522.989    517.647    513.494    510.199
                        507.551    505.347    503.439    501.697    499.875
                        497.542    494.288    490.014    484.928    479.249
                        473.308    467.466    461.640    455.414    448.171
                        439.311    428.678    416.635    403.926    391.247
                        378.543    366.030    354.541    344.167    334.556
                        325.505    316.960    309.088    302.118    295.976
                        290.430    285.266    280.277    275.320    270.335
                        265.364    260.491    255.842    251.553    247.679
                        244.210    241.119    238.366    235.892    233.626
                        231.518    229.537    227.635    225.765    223.895
                        222.004    220.087    218.053    215.855    213.611
                        211.390    209.222    207.170    205.251    203.464
                        201.819    200.310    198.941    197.727    196.653
                        195.698    194.855    194.112    193.452    192.866
                        192.338    191.846    191.379    190.940    190.528
                        190.141    189.775    189.425    189.089    188.763
                        188.441    188.108    187.764    187.429    187.098
                        186.764    186.432    186.095    185.762    185.440
                        185.112    184.785    184.464    184.131    183.779
                        183.415    183.046    182.675    182.307    181.944
                        181.585    181.215    180.821    180.428    180.044
                        179.660    179.277    178.898    178.523    178.151
                        177.781    177.413    177.046    176.667    176.277
                        175.899    175.538    175.176    174.805    174.436
                        174.071    173.708    173.346    172.975    172.593
                        172.221    171.864    171.500    171.124    170.754
                        170.383    170.001    169.611    169.217    168.819
                        168.419    168.021    167.619    167.222    166.836
```

166.443	166.035	165.633	165.237	164.829
164.403	163.968	163.528	163.085	162.641
162.198	161.757	161.304	160.841	160.386
159.943	159.494	159.034	158.582	158.131
157.671	157.206	156.740	156.276	155.813
155.354	154.887	154.424	153.972	153.517
153.065	152.623	152.177	151.721	151.262
150.804	150.351	149.912	149.488	149.059
148.609	148.146	147.692	147.252	146.818
146.386	145.953	145.507	145.045	144.582
144.113	143.630	143.148	142.663	142.170
141.675	141.184	140.696	140.212	139.731
139.255	138.782	138.303	137.829	137.366
136.903	136.444	135.998	135.550	135.096
134.641	134.193	133.761	133.345	132.926
132.496	132.060	131.622	131.183	130.748
130.321	129.890	129.458	129.040	128.635
128.230	127.810	127.378	126.955	126.547
126.136	125.712	125.283	124.846	124.409
123.985	123.575	123.175	122.781	122.387
121.988	121.580	121.156	120.708	120.226
119.718	119.196	118.655	118.094	117.536
116.990	116.440	115.885	115.343	114.816
114.290	113.760	113.232	112.713	112.202
111.701	111.212	110.734	110.266	109.807
109.354	108.905	108.461	108.022	107.578
107.131	106.700	106.291	105.897	105.505
105.113	104.735	104.366	103.999	103.643
103.273	102.862	102.456	102.086	101.740
101.408	101.083	100.758	100.436	100.122
99.822	99.536	99.258	98.989	98.714
98.444	98.188	97.929	97.673	97.431
97.184	96.927	96.683	96.454	96.220
95.975	95.731	95.505	95.295	95.081
94.858	94.634	94.415	94.200	93.990
93.784	93.585	93.391	93.201	93.016
92.833	92.653	92.474	92.296	92.118
91.928	91.727	91.534	91.358	91.189
91.013	90.831	90.660	90.506	90.346
90.176	90.014	89.854	89.688	89.528
89.371	89.208	89.053	88.901	88.741
88.577	88.415	88.254	88.095	87.937
87.781	87.626	87.472	87.317	87.149
86.980	86.818	86.661	86.497	86.309
86.116	85.941	85.768	85.596	85.436
85.269	85.090	84.921	84.766	84.605
84.430	84.252	84.077	83.916	83.770
83.616	83.448	83.276	83.104	82.932
82.760	82.590	82.422	82.255	82.092
81.930	81.769	81.610	81.452	81.295
81.138	80.969	80.677	80.152	79.473
78.772	78.099	77.450	76.823	76.207
75.583	74.930	74.226	73.450	72.590
71.639	70.604	69.507	68.383	67.269
66.194	65.181	64.236	63.351	62.515
61.716	60.952	60.236	59.594	59.037
58.562	58.156	57.800	57.481	57.187
56.910	56.645	56.390	56.141	55.895
55.653	55.412	55.172	54.934	54.696
54.460	54.225	53.991	53.759	53.527
53.298	53.069	52.843	52.617	52.394
52.172	51.951	51.732	51.515	51.299
51.084	50.871	50.660	50.449	50.238
50.025	49.808	49.585	49.355	49.118
48.872	48.616	48.346	48.057	47.753
47.442	47.133	46.831	46.537	46.250
45.971	45.699	45.432	45.170	44.914

```
                        44.662      44.415      44.173      43.934      43.700
                        43.469      43.243      43.020      42.801      42.585
                        42.373      42.164      41.956      41.748      41.539
                        41.329      41.118      40.907      40.697      40.485
                        40.273      40.061      39.851      39.644      39.442
                        39.246      39.054      38.866      38.683      38.503
                        38.327      38.153      37.982      37.813      37.646
PRINT HYD               ID=30  CODE=1


* ADD THE FLOW FROM THE AMOLE ARROYO TO THE FLOW FROM THE AMOLE DEL NORTE
* CHANNEL.  THIS IS THE TOTAL FLOW INTO THE AMOLE DETENTION FACILITY.
* HYD NO. AP40 IS ***** AP 40 *****
ADD HYD                 ID=40  HYD=AP40  I=44  II=30
PRINT HYD               ID=40  CODE=1


*
*  IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  WESTGATE DAM, PL, SV AND AN. THEREFORE, ADD VOLUME
*                  TO THE OUTFLOW HYDROGRAPH FROM AMOLE DETENTION BASIN.
*                  THIS WILL ACCOUNT FOR THE TOTAL VOLUME OF RUNOFF
*                  TRUNCATED.  THE TOTAL TRUNCATED VOLUME TO THIS POINT
*                  IS 474.5 AC FT.  OF THE TRUNCATED VOLUME, 273 AF IS CONTAINED
*                  IN THE GUAC-AMOLE DETENTION BASIN AND THE 201 AF BALANCE
*                  IS CONVEYED TO THE HUBBELL LAKE FACILITY. THE TOTAL VOLUME
*                  OF THE GUAC-AMOLE DETENTION BASIN IS 1,352 AF.
*
*
* ROUTE THE FLOW IN THE AMOLE DETENTION FACILITY WITH THE ROUTE RESERVOIR
ROUTE RESERVOIR         ID=20  HYD=AMOLE.OUT  INFLOW=40 CODE=20.2
                        OUTFLOW         STORAGE         ELEV
                        0               0               70
                        0.01            8               72
                        0.02            30              74
                        0.03            60              76
                        0.04            90              78
                        0.05            200             80
                        0.06            312             82
                        0.07            428             84
                        0.08            551             86
                        0.09            679             88
                        0.10            808             90
                        0.11            948             92
                        0.12            1089            94
                        0.13            1352            96.75
                        330             1420            97
                        2595            1593            98
                        5385            1678            99
                        10159           1782            100.37
*  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 40.1 = 0 CFS
PRINT HYD               ID=20  CODE=1
MODIFY TIME             ID=20  DT=0.05  CODE=3
PRINT HYD               ID=20  CODE=1


*  ROUTE THE OUTFLOW DOWN THE AMOLE/HUBBLE DIVERSION CHANNEL TO 300 FEET
*  NORTH OF THE PROPOSED RIO BRAVO CROSSING
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=116
                        CS=0.03  FS=0.03  N=0.025  DIST=158
                        DIST    EL      DIST    EL
                        0       116     64      100
                        94      100     158     116
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2000  S=0.03
ROUTE                   ID=11  HYD=AP40.5  INFLOW ID=20  DT=0.0
PRINT HYD               ID=11  CODE=1
```

```
* ADD FLOW FROM BASIN 18
ADD HYD                 ID=11  HYD=D40001.01  I=24  II=11
PRINT HYD               ID=11  CODE=1

* ADD FLOW FROM BASIN 17
ADD HYD                 ID=11  HYD=D40001.02  I=23  II=11
PRINT HYD               ID=11  CODE=1

* CALCULATE THE FLOW FROM SUB-BASIN 40001
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=D40001  AREA=0.0717  SQ MI
                        A=28  B=13  C=0  D=59
                        TP=0.153  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


*  ADD THE ROUTED FLOW FROM SUB-BASIN AP40.5 TO THE FLOW FROM SUB-BASIN 40001.
ADD HYD                 ID=3  HYD=D40001.1  I=11  II=2
PRINT HYD               ID=3  CODE=1


* ADD THE OUTFLOW HYDROGRAPH FROM THE NORTH PORTION OF RIO BRAVO.
* TO THE TOTAL FLOW IN HUBBLE LAKE.
ADD HYD                 ID=4  HYD=RB1.1  I=3  II=41
PRINT HYD               ID=4  CODE=1


* ROUTE THE COMBINED FLOW INTO HUBBLE LAKE
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=114
                        CS=0.0289  FS=0.0289  N=0.014  DIST=76
                        DIST    EL      DIST    EL
                        0       114     28      100
                        48      100     76      114
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1200  S=0.0289
ROUTE                   ID=11  HYD=AP40.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=11  CODE=1



* ADD THE OUTFLOW HYDROGRAPH FROM THE SOUTH PORTION OF RIO BRAVO.
* TO THE TOTAL FLOW IN HUBBLE LAKE.
ADD HYD                 ID=3  RB2.1  I=11  II=42
PRINT HYD               ID=3  CODE=1


* RECALL THE HYDROGRAPH FROM THE BORREGA WATERSHED.
*******************************************************************************
***  INSERT BORREGA PUNCH HYD HERE... ***
*******************************************************************************
*
*******************************************************************************
*  BORREGA PUNCH HYD INCLUDES FLOW FROM BASINS 21 & 22 ROUTED THROUGH         *
*  THE PROPOSED FUTURE BORREGA DAM                                            *
*******************************************************************************
RECALL HYD          ID= 5  HYD=BR_DMP1.HYD
                    DT=  .050000 HRS   DA=   1.3703 SQ MI
                    PEAK=    229.183CFS  RO= 1.5809 INCHES  NO PTS=583
                    FLOW RATES
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .198      2.154
                          8.615     21.874     52.865    112.816    184.365
                        224.971    229.183    218.575    208.707    201.803
                        196.768    192.779    189.534    186.951    184.767
```

182.877	180.889	177.182	173.311	170.832
169.331	168.350	167.618	167.005	166.490
166.056	165.685	165.370	165.100	164.867
164.671	164.500	164.353	164.228	164.114
164.017	163.932	163.855	163.790	163.740
163.697	163.651	163.617	163.587	163.558
163.533	163.508	163.489	163.479	163.466
163.449	163.436	163.423	163.414	163.411
163.404	163.392	163.390	163.388	163.381
163.378	163.371	163.367	163.367	163.366
163.368	163.366	163.365	163.367	163.372
163.372	163.371	163.373	163.373	163.378
163.382	163.383	163.382	163.386	163.390
163.393	163.398	163.404	163.405	163.412
163.417	163.420	163.424	163.424	163.430
163.435	163.438	163.443	163.451	163.459
163.467	163.470	163.494	163.521	163.539
163.545	163.545	163.550	163.551	163.546
163.543	163.542	163.542	163.541	163.534
163.532	163.534	163.530	163.528	163.525
163.525	163.523	163.523	163.520	163.514
163.509	163.507	163.505	163.504	163.503
163.501	163.493	163.490	163.492	163.488
163.486	163.482	163.482	163.480	163.480
163.477	163.470	163.466	163.463	163.461
163.460	163.459	163.458	163.457	163.456
163.454	163.447	144.308	83.483	58.475
51.278	43.639	39.206	34.678	31.103
27.912	25.513	23.569	22.022	20.744
19.694	18.814	18.076	17.451	16.922
16.471	16.077	15.741	15.454	15.198
14.976	14.779	14.608	14.455	14.322
14.201	14.097	14.000	13.909	13.827
13.758	13.692	13.627	13.567	13.511
13.458	13.408	13.359	13.306	13.257
13.215	13.172	13.125	13.083	13.047
13.005	12.967	12.929	12.893	12.857
12.823	12.788	12.750	12.720	12.687
12.650	12.615	12.588	12.558	12.525
12.494	12.463	12.433	12.402	12.372
12.342	12.312	12.277	12.244	12.216
12.187	12.152	12.121	12.095	12.063
12.033	12.002	11.974	11.944	11.916
11.886	11.853	11.827	11.798	11.766
11.742	11.716	11.686	11.656	11.628
11.600	11.574	11.553	11.530	11.503
11.471	11.445	11.425	11.402	11.378
11.354	11.330	11.301	11.277	11.257
11.229	11.204	11.183	11.155	11.131
11.105	11.081	11.056	11.032	11.008
10.985	10.961	10.933	10.914	10.891
10.864	10.845	10.823	10.797	10.772
10.748	10.725	10.707	10.686	10.662
10.639	10.619	10.599	10.578	10.558
10.536	10.509	10.484	10.464	10.443
10.420	10.391	10.368	10.350	10.331
10.305	10.284	10.268	10.245	10.224
10.202	10.182	10.160	10.140	10.118
10.099	10.078	10.060	10.039	10.016
10.000	9.981	9.957	9.935	9.919
9.900	9.877	9.855	9.842	9.825
9.804	9.785	9.766	9.748	9.729
9.709	9.690	9.670	9.651	9.633
9.615	9.598	9.582	9.565	9.543
9.524	9.510	9.494	9.477	9.454
9.436	9.421	9.400	9.382	9.368
9.347	9.330	9.317	9.298	9.281

```
                    9.264      9.248      9.231      9.215      9.198
                    9.183      9.166      9.152      9.135      9.116
                    9.103      9.087      9.068      9.055      9.039
                    9.019      9.001      8.990      8.975      8.955
                    8.937      8.921      8.911      8.897      8.879
                    8.863      8.849      8.834      8.818      8.802
                    8.786      8.770      8.754      8.739      8.724
                    8.710      8.696      8.683      8.671      8.658
                    8.639      8.624      8.613      8.600      8.586
                    8.566      8.550      8.540      8.528      8.509
                    8.495      8.484      8.467      8.453      8.443
                    8.426      8.413      8.404      8.388      8.376
                    8.362      8.350      8.336      8.323      8.309
                    8.296      8.282      8.270      8.256      8.238
                    8.228      8.215      8.204      8.190      8.173
                    8.164      8.152      8.137      8.128      8.116
                    8.100      8.086      8.079      8.068      8.052
                    8.037      8.023      8.009      8.002      7.990
                    7.975      7.961      7.949      7.937      7.924
                    7.911      7.898      7.884      7.870      7.857
                    7.844      7.832      7.820      7.809      7.798
                    7.788      7.768      7.677      7.544      7.399
                    7.225      7.011      6.761      6.482      6.186
                    5.881      5.573      5.267      4.966      4.673
                    4.388      4.113      3.849      3.595      3.353
                    3.123      2.904      2.696      2.501      2.317
                    2.143      1.981      1.828      1.686      1.553
                    1.429      1.314      1.206      1.107      1.015
                     .930       .851       .778       .711       .649
                     .593       .541       .493       .449       .408
                     .372       .338       .307       .279       .253
                     .229       .208       .189       .171       .155
                     .140       .127       .114       .103       .093
                     .084       .076       .069       .062       .056
                     .051       .046       .041       .037       .034
                     .030       .027       .025       .022       .020
                     .018       .016       .015       .013       .012
                     .011       .010       .009       .008       .007
                     .006       .006       .005       .005       .004
                     .004       .003       .003       .003       .002
                     .002       .002       .002       .002       .001
                     .001       .001       .001
```

```
PRINT HYD               ID=5  CODE=1
* ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.
* HYD NO. RB2.1 IS ***** AP 50 *****
ADD HYD                 ID=4  HYD=RB2.1  I=3  II=5
PRINT HYD               ID=4  CODE=1
* ROUTE THE TOTAL FLOW INTO HUBBLE LAKE WITH THE ROUTE RESERVOIR.
*
*  IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  WESTGATE DAM, PL, SV AND AN. THEREFORE, ADD VOLUME
*                  TO THE OUTFLOW HYDROGRAPH FROM AMOLE DETENTION BASIN.
*                  THIS WILL ACCOUNT FOR THE TOTAL VOLUME OF RUNOFF
*                  TRUNCATED.  THE TOTAL TRUNCATED VOLUME TO THIS POINT
*                  IS 474.5 AC FT.  OF THE TRUNCATED VOLUME, 273 AF IS CONTAINED
*                  IN THE GUAC-AMOLE DETENTION BASIN AND THE 201 AF BALANCE
*                  IS CONVEYED TO THE HUBBELL LAKE FACILITY.
*
ROUTE RESERVOIR         ID=99  HYD=HUBBLE.LAKE  INFLOW=4 CODE=20.2
                        OUTFLOW         STORAGE         ELEV
                        0               0               17.2
                        0.01            46              20
                        0.02            120             22
                        0.03            193             24
                        0.04            260             26
```

```
                        0.05            330             28
                        0.06            408             30
                        0.07            493             32
                        3850            528             33
                        9300            570             34
                        16750           610             35
                        19854           650             35.5
*  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 50.1 = 0 CFS
* HYD NO. 99 IS ***** AP 50.2 *****
PRINT HYD               ID=99  CODE=1
MODIFY TIME             ID=99  DT=0.05  CODE=3
PRINT HYD               ID=99  CODE=1
FINISH
```

```
START                0.0 HOURS    PC=0   PL=-1
*
*       AMOLE ARROYO AND HUBBLE LAKE SYSTEM
*
*
* 100-YR, 24-HR STORM WITH SEDIMENT
* FILE NAME: SBAMOLE2
* BY:URSGWC
* LAST REVISION:3-4-2000
*
*************************************************************************
* PURPOSE:
*       TO DETERMINE RUNOFF FROM THE AMOLE BASIN, SACATE BLANCO BASIN, RIO BRAVO
*       BASIN, BORREGA BASIN AND THE SOUTH EASTERN PORTION OF THE SNOW VISTA BASINS.
*       THIS MODEL REFLECTS THE LATEST DEVELOPMENT PLANS.  FLOWS ARE CALCULATED AND
*       ROUTED FROM NORTH WEST TO SOUTH EAST THROUGH THE PROPOSED ARROYO
*       IMPROVMENTS DESCRIBED IN THE AMOLE-HUBBELL DRAINAGE MASTER PLAN-FINAL
*       FACILITIES REPORT PREPARED FOR AMAFCA BY LEEDSHILL-HERKENHOFF INC. DATED
*       JULY 22 1999.  WHERE IT WAS NECESSARY, BASINS WHICH FELL IN THE EDGE OF
*       THE STUDY AREA HAD AREAS ADJUSTED TO ACCOUNT FOR DEVELOPMENT.  LAND TREATMENT
*       PERCENTAGES REMAINED THE SAME WITHIN THE TRUNCATED BASINS.  WITHIN THE STUDY
*       AREA LAND TREATMENT PERCENTAGES WERE ADJUSTED TO REFLECT THE NEW
*       DEVELOPMENT PLAN. MUCH OF THE CODE PRESENTED HERE
*       ORIGINATED FROM THE AHYMO CODE DEVELOPED BY LEEDSHILL-HERKENHOFF INC.
*       AND WHERE IT WAS APPROPRIATE IT WAS CHANGED OR ADJUSTED.  THE AMOLE ARROYO
*       FROM THE SNOW VISTA CONFLUENCE TO THE AMOLE DETENTION FACILITY IS
*       MODELED AS DESCRIBED BY THE L-H INC. REPORT TO AMAFCA.  THE ARROYO IS
*       MODELED AS A HIGH FLOW COMPOSITE SECTION WITH A SOIL CEMENT CHANNEL TO CARRY THE
*       10 YR FLOW WITH 100 YR CAPACITY PROVIDED BY OVERBANK FLOW CONTAINED WITHIN THE 150 FT
*       RIGHT OF WAY BY DIKES.  A MANNINGS N VALUE OF .03 WAS USED FOR THE SOIL CEMENT PORTION
*       AND .045 FOR THE OVERBANK PORTIONS.  THE COA DPM ALLOWS FOR .045 FOR OVERBANK FLOW.
*       NO VALUE IS PRESENTED FOR SOIL CEMENT.  THE DPM HOWEVER DOES PRESENT A VALUE OF
*       .030 FOR SMOOTH EARTH LINED CHANNELS AND .030 FOR ARROYO CHANNELS.  THE L-H STUDY ALSO
*       USED AN N OF .030 FOR IMPROVED CHANNELS USING SOIL CEMENT.  THUS, N=.030 WAS CHOSEN.
*************************************************************************
*
* IMPORTANT NOTE1: ROUTE RESERVOIR DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  WESTGATE DAM. THEREFORE, ADD ** 278 AC.FT ** OF VOLUME
*                  TO ALL OF THE HYDROGRAPHS PUBLISHED IN THIS RUN.
*                  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*                  TRUNCATED FROM WESTGATE DAM.
*
*************************************************************************
*
* IMPORTANT NOTE2: ROUTE RESERVOIR DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  POWERLINE CHANNEL. THEREFORE, ADD ** 55.4 AC.FT ** OF VOLUME
*                  TO THE AFFECTED HYDROGRAPHS PUBLISHED IN THIS RUN.
*                  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*                  TRUNCATED FROM THE POWERLINE ALTERNATIVE.
*
*************************************************************************
*
* IMPORTANT NOTE3: N/A
*
*************************************************************************
*
* IMPORTANT NOTE4: ROUTE RESERVOIR DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  AMOLE DEL NORTE. THEREFORE, ADD ** 3.2 AC.FT ** OF VOLUME
*                  TO THE AFFECTED HYDROGRAPHS PUBLISHED IN THIS RUN.
*                  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*                  TRUNCATED FROM THE AMOLE DEL NORTE ALTERNATIVE.
*************************************************************************
* ANALYSIS ASSUMPTIONS:
*************************************************************************
* 1. ALL LAND IN THIS BASIN IS MODELED AS DEVELOPED CONDITION.
*
* 2. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
```

```
*     A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
*     TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
*     DEVELOPED SUB-BASIN THAT COULD PROBABLY PRODUCE SOME SEDIMENT, SUCH AS PARKS
*     AND SCHOOL PLAY GROUNDS. A FACTOR OF 2% WAS ADDED TO THE BASINS WHICH
*     ARE BOUNDED BY AMOLE CHANNEL TO THE WEST, GIBSON TO THE NORTH AND
*     UNSER TO THE WEST.
*
*
* 3. BOTH THE AMOLE DETENTION FACILITY AND HUBBELL LAKE DETENTION FACILITY
*     PRINCIPAL SPILLWAYS ARE MODELED CLOSED.  THESE TWO FACILITIES ARE
*     REPRESENTATED AS AP40.1 AND AP 50.1, RESPECTIVELY ON THE SUPPLEMENTAL
*     MAPPING AND REPORT.
*
* 4. THE AMOLE BASIN HAS FREE DISCHARGE TO THE AMOLE ARROYO.  POWERLINE
*     HAS A RESTRICTED DISCHARGE OF 20 AND SNOW VISTA IS FREE DISCHARGE.
*     THE RUNOFF IS CONVEYED IN A HIGH FLOW CHANNEL TO THE AMOLE DETENTION FACILITY.
*
* 5. THIS ALTERNATIVE INCLUDES THE GUAC DETENTION BASIN.
*
* 6. THIS ALTERNATIVE INCLUDES BASINS 35301, 35303, AND 35305 FROM THE
*     AN_DMP.DAT FILE AS A RESULT OF THE UNSER EXTENSION.
*************************************************************************
*S 100 YEAR 24HR STORM DEVELOPED CONDITION
RAINFALL              TYPE=2  0.0  1.87  2.20  2.66    DT=0.05
** 10 YEAR 24HR STORM DEVELOPED CONDITION
**RAINFALL            TYPE=2  0.0  1.25  1.47  1.77    DT=0.05
**  2 YEAR 24HR STORM DEVELOPED CONDITION
**RAINFALL            TYPE=2  0.0  0.74  0.95  1.15    DT=0.05
*************************************************************************
*S OFF SITE BASIN DESIGNATIONS CORROSPOND TO DESIGNATIONS FOUND IN
*S AMOLE-HUBBELL DRAINAGE MASTER PLAN-FINAL FACILITIES REPORT
*S VOLUME 1 PREPARED FOR AMAFCA BY LEEDSHILL-HERKENHOFF INC. DATED
*S      JULY 22 1999.
*S
*S
*S BEGIN AMOLE BASIN
*S
*S
* RECALL OUTFLOW HYDROGRAPH FROM THE WESTGATE DAM
* HYD NO. WG100D1B.HYD
*************************************************************************
***  INSERT WESTGATE DAM PUNCH HYD HERE... ***
*************************************************************************
*
RECALL HYD            ID= 5  HYD=WG_DMP.HYD
                      DT=  .050000 HRS   DA=   5.1573 SQ MI
                      PEAK=     73.469CFS  RO=  .6217 INCHES  NO PTS=600
                      FLOW RATES
                             .000      1.900      1.900      1.900      1.900
                            1.900      1.900      1.900      1.900      1.900
                            1.900      1.900      1.900      1.900      1.900
                            1.900      1.900      1.900      1.900      1.900
                            1.900      1.900      1.900      1.900      1.900
                           12.766     24.804     26.271     31.211     35.697
                           40.711     43.811     48.390     51.550     54.189
                           57.169     59.263     60.946     62.485     63.894
                           64.881     65.610     66.285     66.913     67.402
                           67.816     68.201     68.558     68.888     69.192
                           69.474     69.712     69.915     70.105     70.284
                           70.454     70.617     70.772     70.921     71.064
                           71.203     71.336     71.464     71.587     71.706
                           71.803     71.898     71.990     72.079     72.166
                           72.250     72.332     72.411     72.487     72.560
                           72.629     72.694     72.755     72.810     72.860
                           72.906     72.947     72.986     73.021     73.054
                           73.083     73.111     73.135     73.157     73.178
                           73.197     73.215     73.232     73.247     73.262
```

73.277	73.290	73.302	73.314	73.325
73.335	73.345	73.354	73.363	73.371
73.379	73.386	73.393	73.399	73.405
73.410	73.415	73.420	73.424	73.429
73.432	73.436	73.439	73.442	73.445
73.447	73.450	73.452	73.454	73.455
73.457	73.458	73.460	73.461	73.462
73.463	73.464	73.465	73.465	73.466
73.466	73.467	73.467	73.468	73.468
73.468	73.469	73.469	73.469	73.469
73.469	73.469	73.469	73.469	73.469
73.469	73.469	73.469	73.469	73.468
73.468	73.468	73.467	73.467	73.467
73.466	73.466	73.465	73.464	73.464
73.463	73.462	73.462	73.461	73.460
73.459	73.458	73.457	73.456	73.455
73.454	73.453	73.452	73.451	73.449
73.448	73.447	73.446	73.444	73.443
73.441	73.440	73.439	73.437	73.435
73.434	73.432	73.431	73.429	73.427
73.426	73.424	73.422	73.420	73.418
73.416	73.414	73.413	73.411	73.409
73.407	73.404	73.402	73.400	73.398
73.396	73.394	73.392	73.389	73.387
73.385	73.383	73.380	73.378	73.375
73.373	73.371	73.368	73.366	73.363
73.361	73.358	73.356	73.353	73.350
73.348	73.345	73.342	73.340	73.337
73.334	73.331	73.329	73.326	73.323
73.320	73.317	73.314	73.311	73.308
73.306	73.303	73.300	73.297	73.294
73.290	73.287	73.284	73.281	73.278
73.275	73.272	73.269	73.265	73.262
73.259	73.256	73.253	73.249	73.246
73.243	73.239	73.236	73.233	73.229
73.226	73.222	73.219	73.216	73.212
73.209	73.205	73.202	73.198	73.195
73.191	73.188	73.184	73.180	73.177
73.173	73.170	73.166	73.162	73.159
73.155	73.151	73.147	73.144	73.140
73.136	73.132	73.129	73.125	73.121
73.117	73.113	73.110	73.106	73.102
73.098	73.094	73.090	73.086	73.082
73.078	73.075	73.071	73.067	73.063
73.059	73.055	73.051	73.047	73.043
73.038	73.034	73.030	73.026	73.022
73.018	73.014	73.010	73.006	73.001
72.997	72.993	72.989	72.985	72.981
72.976	72.972	72.968	72.964	72.959
72.955	72.951	72.947	72.942	72.938
72.934	72.929	72.925	72.921	72.916
72.912	72.907	72.903	72.899	72.894
72.890	72.885	72.881	72.877	72.872
72.868	72.863	72.859	72.854	72.850
72.845	72.841	72.836	72.832	72.827
72.823	72.818	72.813	72.809	72.804
72.800	72.795	72.790	72.786	72.781
72.777	72.772	72.767	72.763	72.758
72.753	72.748	72.744	72.739	72.734
72.730	72.725	72.720	72.715	72.711
72.706	72.701	72.696	72.692	72.687
72.682	72.677	72.672	72.668	72.663
72.658	72.653	72.648	72.643	72.638
72.634	72.629	72.624	72.619	72.614
72.609	72.604	72.599	72.594	72.589
72.584	72.579	72.574	72.569	72.564
72.560	72.555	72.550	72.545	72.539

```
                        72.534     72.529     72.524     72.519     72.514
                        72.509     72.504     72.499     72.494     72.489
                        72.484     72.479     72.474     72.469     72.464
                        72.458     72.453     72.448     72.443     72.438
                        72.433     72.428     72.422     72.417     72.412
                        72.407     72.402     72.396     72.391     72.386
                        72.381     72.376     72.370     72.365     72.360
                        72.355     72.349     72.344     72.339     72.334
                        72.328     72.323     72.318     72.313     72.307
                        72.302     72.297     72.291     72.286     72.281
                        72.275     72.270     72.265     72.259     72.254
                        72.248     72.243     72.237     72.232     72.226
                        72.221     72.215     72.209     72.203     72.197
                        72.191     72.185     72.178     72.172     72.165
                        72.159     72.152     72.145     72.138     72.131
                        72.124     72.116     72.109     72.102     72.094
                        72.086     72.079     72.071     72.063     72.055
                        72.048     72.040     72.031     72.023     72.015
                        72.007     71.999     71.990     71.982     71.974
                        71.965     71.957     71.948     71.940     71.931
                        71.923     71.914     71.905     71.897     71.888
                        71.879     71.870     71.862     71.853     71.844
                        71.835     71.826     71.817     71.809     71.800
                        71.791     71.782     71.773     71.764     71.755
                        71.746     71.737     71.728     71.719     71.710
                        71.701     71.691     71.680     71.669     71.658
                        71.647     71.636     71.625     71.614     71.604
                        71.593     71.582     71.571     71.560     71.549
                        71.538     71.527     71.516     71.505     71.494
                        71.483     71.472     71.461     71.450     71.439
                        71.428     71.417     71.406     71.396     71.385
                        71.374     71.363     71.351     71.340     71.329
                        71.318     71.307     71.296     71.285     71.274
                        71.263     71.252     71.241     71.230     71.219
PRINT HYD               ID=5  CODE=1
* ROUTE FLOW THROUGH 00102
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100  MAX EL=104
                        CS=0.02  FS=0.02  N=0.018  DIST=29
                        DIST    EL      DIST    EL
                        0       104     12       100
                        17      100     29       104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2300  S=0.02
ROUTE                   ID=11  HYD=WG101.5  INFLOW ID=5  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 00102
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=00102  AREA=0.1119  SQ MI
                        A=22  B=19  C=12  D=47
                        TP=0.143  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
* ADD THE ROUTED FLOW FROM SUB-BASIN WG101.5 TO THE FLOW FROM SUB-BASIN 00102.
** USE ROUTE RESERVOIR TO SIMULATE RESTRICTED DISCHARGE OF 84.20 CFS
**ROUTE RESERVOIR         ID=1  HYD=DCON.102  I=2  CODE=5
**                        OUTFLOW         STORAGE         ELEV
**                        0               0               100
**                        84.19           0.001           100.1
**                        84.20           3.5             105
**PRINT HYD               ID=1  CODE=5
ADD HYD                 ID=3  HYD= 00102.1  I=11  II=2
PRINT HYD               ID=3  CODE=1



* RECALL OUTFLOW HYDROGRAPH FROM POWERLINE CHANNEL
```

```
*****************************************************************************
***  INSERT POWERLINE PUNCH HYD HERE... ***
*****************************************************************************
*
* IMPORTANT NOTE2: ROUTE RESERVOIR DOES NOT INCLUDE ALL OF THE VOLUME FROM
*                  POWERLINE CHANNEL. THEREFORE, ADD ** 20.6 AC.FT ** OF VOLUME
*                  TO THE AFFECTED HYDROGRAPHS PUBLISHED IN THIS RUN.
*                  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*                  TRUNCATED FROM THE POWERLINE ALTERNATIVE. THE TOTAL
*                  TRUNCATED VOLUME TO THIS POINT IS 289.6 AC FT
*
RECALL HYD          ID=11  HYD=PL_DMP1.HYD
                    DT=  .050000 HRS   DA=   1.2047 SQ MI
                    PEAK=     19.336CFS  RO=  .6646 INCHES  NO PTS=600
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .002       .012       .035
                          .088       .213       .449       .828      1.389
                         2.163      3.126      4.175      5.205      6.158
                         7.014      7.767      8.420      8.989      9.489
                         9.930     10.320     10.665     10.969     11.238
                        11.477     11.690     11.881     12.056     12.217
                        12.367     12.508     12.641     12.767     12.887
                        13.002     13.111     13.217     13.318     13.416
                        13.510     13.602     13.690     13.776     13.860
                        13.941     14.020     14.098     14.174     14.248
                        14.320     14.391     14.461     14.529     14.596
                        14.662     14.726     14.790     14.852     14.914
                        14.974     15.034     15.093     15.150     15.207
                        15.263     15.319     15.373     15.427     15.480
                        15.532     15.584     15.635     15.685     15.734
                        15.783     15.832     15.880     15.927     15.973
                        16.019     16.065     16.109     16.154     16.197
                        16.241     16.283     16.326     16.367     16.408
                        16.449     16.490     16.529     16.569     16.608
                        16.646     16.684     16.722     16.759     16.796
                        16.832     16.868     16.904     16.939     16.974
                        17.009     17.044     17.078     17.111     17.145
                        17.177     17.210     17.242     17.274     17.305
                        17.336     17.366     17.396     17.426     17.455
                        17.484     17.513     17.541     17.569     17.596
                        17.623     17.650     17.676     17.702     17.728
                        17.753     17.778     17.803     17.827     17.851
                        17.875     17.898     17.921     17.944     17.967
                        17.989     18.011     18.032     18.054     18.075
                        18.096     18.116     18.136     18.156     18.176
                        18.195     18.215     18.234     18.252     18.271
                        18.289     18.307     18.325     18.342     18.359
                        18.376     18.393     18.410     18.426     18.442
                        18.458     18.474     18.490     18.505     18.520
                        18.535     18.550     18.564     18.579     18.593
                        18.607     18.621     18.634     18.648     18.661
                        18.674     18.687     18.700     18.712     18.725
                        18.737     18.749     18.761     18.773     18.785
                        18.796     18.807     18.819     18.830     18.841
                        18.851     18.862     18.872     18.883     18.893
                        18.903     18.913     18.923     18.932     18.942
                        18.952     18.961     18.970     18.979     18.987
                        18.993     18.997     19.000     19.002     19.004
                        19.006     19.007     19.009     19.010     19.012
                        19.013     19.015     19.016     19.017     19.019
                        19.020     19.021     19.023     19.024     19.025
```

19.027	19.028	19.029	19.031	19.032
19.033	19.035	19.036	19.037	19.039
19.040	19.041	19.043	19.044	19.045
19.047	19.048	19.049	19.050	19.052
19.053	19.054	19.056	19.057	19.058
19.059	19.061	19.062	19.063	19.065
19.066	19.067	19.068	19.070	19.071
19.072	19.073	19.075	19.076	19.077
19.078	19.080	19.081	19.082	19.083
19.085	19.086	19.087	19.088	19.090
19.091	19.092	19.093	19.095	19.096
19.097	19.098	19.099	19.101	19.102
19.103	19.104	19.105	19.107	19.108
19.109	19.110	19.111	19.113	19.114
19.115	19.116	19.117	19.119	19.120
19.121	19.122	19.123	19.125	19.126
19.127	19.128	19.129	19.130	19.132
19.133	19.134	19.135	19.136	19.137
19.139	19.140	19.141	19.142	19.143
19.144	19.146	19.147	19.148	19.149
19.150	19.151	19.152	19.154	19.155
19.156	19.157	19.158	19.159	19.160
19.162	19.163	19.164	19.165	19.166
19.167	19.168	19.169	19.171	19.172
19.173	19.174	19.175	19.176	19.177
19.178	19.179	19.181	19.182	19.183
19.184	19.185	19.186	19.187	19.188
19.189	19.190	19.192	19.193	19.194
19.195	19.196	19.197	19.198	19.199
19.200	19.201	19.202	19.203	19.204
19.206	19.207	19.208	19.209	19.210
19.211	19.212	19.213	19.214	19.215
19.216	19.217	19.218	19.219	19.220
19.221	19.223	19.224	19.225	19.226
19.227	19.228	19.229	19.230	19.231
19.232	19.233	19.234	19.235	19.236
19.237	19.238	19.239	19.240	19.241
19.242	19.243	19.244	19.245	19.246
19.247	19.248	19.249	19.250	19.251
19.252	19.253	19.254	19.256	19.257
19.258	19.259	19.260	19.261	19.262
19.263	19.264	19.265	19.266	19.267
19.268	19.269	19.270	19.270	19.271
19.272	19.273	19.274	19.275	19.276
19.277	19.278	19.279	19.280	19.281
19.282	19.283	19.284	19.285	19.286
19.287	19.288	19.289	19.290	19.291
19.291	19.292	19.292	19.293	19.294
19.294	19.294	19.295	19.295	19.296
19.296	19.297	19.297	19.298	19.298
19.298	19.299	19.299	19.300	19.300
19.301	19.301	19.301	19.302	19.302
19.303	19.303	19.304	19.304	19.304
19.305	19.305	19.306	19.306	19.306
19.307	19.307	19.308	19.308	19.308
19.309	19.309	19.310	19.310	19.310
19.311	19.311	19.312	19.312	19.312
19.313	19.313	19.314	19.314	19.314
19.315	19.315	19.316	19.316	19.316
19.317	19.317	19.318	19.318	19.318
19.319	19.319	19.319	19.320	19.320
19.321	19.321	19.321	19.322	19.322
19.322	19.323	19.323	19.324	19.324
19.324	19.325	19.325	19.325	19.326
19.326	19.326	19.327	19.327	19.328
19.328	19.328	19.329	19.329	19.329
19.330	19.330	19.330	19.331	19.331

```
                        19.331     19.332     19.332     19.332     19.333
                        19.333     19.333     19.334     19.334     19.334
                        19.335     19.335     19.335     19.336     19.336
PRINT HYD               ID=11  CODE=1
*
ADD HYD                 ID=3  HYD=102.1  I=11 II=3
PRINT HYD               ID=3  CODE=1
*
* ROUTE FLOW IN THE AMOLE ARROYO TO 900 FEET EAST OF POWERLINE CHANNEL.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.02  FS=0.02  N=0.013  DIST=32
                        DIST    EL      DIST    EL
                        0       104     12       100
                        22      100     32       104
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=900  S=0.02
ROUTE                   ID=12  HYD=00102.5  INFLOW ID=3  DT=0.05
PRINT HYD               ID=12  CODE=1
*
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=00103A  AREA=0.0717  SQ MI
                        A=0   B=28  C=23  D=49
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
* ROUTE FLOW THROUGH SUB-BASIN 00103B TO THE AMOLE ARROYO.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=103
                        CS=0.00358  FS=0.00358  N=0.03  DIST=22
                        DIST    EL      DIST    EL
                        0       103     6       100
                        16      100     22      103
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2790  S=0.00358
ROUTE                   ID=11  HYD=00103A.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
* CALCULATE FLOW FROM SUB-BASIN 00103B
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=00103B  AREA=0.1207 SQ MI
                        A=1   B=28   C=22  D=49
                        TP=0.225  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
* ADD THE ROUTE FLOW FROM SUB-BASIN 00103A.5 TO THE FLOW
* FROM SUB-BASIN 00103B.
ADD HYD                 ID=3  HYD=00103B.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
** USE ROUTE RESERVOIR TO SIMULATE RESTRICTED DISCHARGE OF 123.10 CFS
**ROUTE RESERVOIR         ID=1  HYD=DCON.103  I=3  CODE=5
**                        OUTFLOW         STORAGE         ELEV
**                        0               0               100
**                        123.09          0.001           100.1
**                        123.10          5.5             105
**PRINT HYD               ID=1  CODE=5
* ADD THE COMBINED FLOW FROM SUB-BASIN 00103B.1 TO THE ROUTED FLOW
* IN THE AMOLE ARROYO.
ADD HYD                 ID=4  HYD=00103B.2  I=12  II=3
PRINT HYD               ID=4  CODE=1
* ROUTE FLOW FROM SUB-BASIN 00103B.2 IN THE AMOLE ARROYO TO
* DELGADO STREET.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.02  FS=0.02  N=0.013  DIST=32
                        DIST    EL      DIST    EL
                        0       104     12       100
                        24      100     36       104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=930  S=0.02
ROUTE                   ID=11  HYD=00103B.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 00104
```

```
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=00104  AREA=0.0183 SQ MI
                        A=8   B=23  C=20  D=49
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
** USE ROUTE RESERVOIR TO SIMULATE RESTRICTED DISCHARGE OF 22.0 CFS
**ROUTE RESERVOIR         ID=1  HYD=DCON.104  I=2  CODE=5
**                        OUTFLOW         STORAGE         ELEV
**                        0               0               100
**                        21.99           0.001           100.1
**                        22.0            5.5             105
**PRINT HYD               ID=1  CODE=5


* ADD THE FLOW FROM SUB-BASIN 00104 TO THE ROUTED FLOW IN THE AMOLE ARROYO.
ADD HYD                 ID=3  HYD=00104.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
* ROUTE FLOW FROM SUB-BASIN 00104 IN THE AMOLE ARROYO TO 1900 FEET WEST
*  TO THE NEW AMOLE ARROYO ALIGNMENT
*
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0275  FS=0.0275  N=0.013  DIST=40
                        DIST    EL      DIST    EL
                        0       104     12      100
                        28      100     40      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1900  S=0.0275
ROUTE                   ID=11  HYD=00104.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 00105
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=00105  AREA=0.0739 SQ MI
                        A=6   B=34  C=11  D=49
                        TP=0.137  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
** USE ROUTE RESERVOIR TO SIMULATE RESTRICTED DISCHARGE OF 96.9 CFS
**ROUTE RESERVOIR         ID=1  HYD=DCON.105  I=2  CODE=5
**                        OUTFLOW         STORAGE         ELEV
**                        0               0               100
**                        96.89           0.001           100.1
**                        96.90           5.5             105
**PRINT HYD               ID=1  CODE=5
* ADD THE FLOW FROM SUB-BASIN 00105 TO THE ROUTED FLOW IN THE AMOLE ARROYO.

ADD HYD                 ID=3  HYD=00105.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
*
* ROUTE FLOW FROM SUB-BASIN 00105 IN THE NEW AMOLE ARROYO TO VALLEY
* VIEW DR, L=750
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0275  FS=0.0275  N=0.013  DIST=40
                        DIST    EL      DIST    EL
                        0       104     12      100
                        28      100     40      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=750  S=0.0275
ROUTE                   ID=11  HYD=00105.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 39b
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=3  HYD=39b  AREA=0.0133 SQ MI
                        A=0   B=25  C=20  D=55
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
```

```
*
* CALCULATE FLOW FROM SUB-BASIN 38
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=4  HYD=38  AREA=0.0068 SQ MI
                        A=0   B=93  C=0  D=7
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=4  CODE=1
*
*
ADD HYD                 ID=3  HYD=38.1 I=4  II=3
ADD HYD                 ID=3  HYD=38.1 I=11  II=3
PRINT HYD               ID=3  CODE=1
*
* ROUTE FLOW COMBINED FLOW IN THE NEW AMOLE ARROYO 1300 FT EAST
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0275  FS=0.0275  N=0.013  DIST=40
                        DIST    EL      DIST    EL
                        0       104     12      100
                        28      100     40      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1300  S=0.0275
ROUTE                   ID=11  HYD=38.2  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALC FLOW FROM 40b AND ADD TO AMOLE
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=4  HYD=41b  AREA=0.0143 SQ MI
                        A=0   B=25  C=20  D=55
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=4  CODE=1
*
* ADD FLOWS
ADD HYD                ID=3 HYD=41.1 I=11 II=4
*
* ROUTE TO SNOW VISTA, L=400 FT
*
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0275  FS=0.0275  N=0.013  DIST=40
                        DIST    EL      DIST    EL
                        0       104     12      100
                        28      100     40      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1300  S=0.0275
ROUTE                   ID=11  HYD=41.1  INFLOW ID=3  DT=0.0


PRINT HYD               ID=11  CODE=1
*
*THIS GETS FLOW TO THE SNOW VISTA CHANNEL
*
*****************************************************************************
***  INSERT SNOW VISTA PUNCH HYD HERE... ***
*****************************************************************************
RECALL HYD          ID=2  HYD=SV_DMP2.HYD
                    DT=  .050000 HRS   DA=   1.8195 SQ MI
                    PEAK=   2040.912CFS  RO= 1.8693 INCHES  NO PTS=600
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .005       .059
                          .370      1.717      8.286     49.620    285.772
                       968.466   1711.058   2040.912   2013.839   1861.544
                      1706.498   1577.769   1472.655   1383.733   1308.519
                      1243.797   1186.888   1133.158   1074.012   1006.188
                       938.524    880.590    834.141    797.725    769.045
```

745.480	724.696	703.567	678.035	642.343
591.869	528.020	459.592	393.742	333.574
281.379	239.098	205.633	179.037	158.819
143.010	128.740	115.662	104.999	96.816
90.370	85.026	80.467	76.525	73.065
69.924	66.767	63.344	59.667	56.215
53.460	51.317	49.576	48.095	46.792
45.613	44.524	43.504	42.539	41.624
40.758	39.936	39.158	38.419	37.715
37.046	36.411	35.807	35.233	34.686
34.167	33.676	33.213	32.776	32.362
31.969	31.593	31.231	30.879	30.534
30.197	29.869	29.550	29.243	28.950
28.672	28.411	28.169	27.946	27.744
27.564	27.408	27.276	27.173	27.104
27.074	27.087	27.141	27.231	27.350
27.492	27.649	27.814	27.983	28.148
28.308	28.457	28.594	28.717	28.827
28.923	29.006	29.076	29.136	29.184
29.221	29.247	29.261	29.263	29.255
29.239	29.214	29.182	29.143	29.096
29.044	28.988	28.928	28.865	28.800
28.734	28.668	28.600	28.531	28.458
28.383	28.304	28.225	28.145	28.065
27.986	27.909	27.832	27.755	27.679
27.602	27.525	27.447	27.368	27.288
27.207	27.125	27.044	26.965	26.886
26.809	26.731	26.654	26.576	26.499
26.423	26.348	26.273	26.198	26.123
26.047	25.971	25.894	25.818	25.741
25.665	25.590	25.517	25.445	25.375
25.305	25.235	25.167	25.100	25.033
24.967	24.901	24.835	24.768	24.701
24.633	24.563	24.493	24.424	24.355
24.287	24.219	24.152	24.086	24.021
23.956	23.892	23.829	23.767	23.706
23.644	23.584	23.523	23.463	23.404
23.347	23.290	23.234	23.178	23.122
23.065	23.010	22.954	22.899	22.843
22.786	22.728	22.671	22.615	22.558
22.502	22.447	22.391	22.336	22.281
22.226	22.172	22.118	22.064	22.010
21.956	21.903	21.850	21.799	21.747
21.696	21.644	21.591	21.539	21.489
21.440	21.393	21.345	21.295	21.245
21.196	21.147	21.099	21.052	21.005
20.958	20.911	20.864	20.817	20.771
20.724	20.678	20.632	20.585	20.539
20.494	20.448	20.404	20.360	20.316
20.272	20.228	20.185	20.142	20.100
20.058	20.016	19.973	19.929	19.887
19.846	19.806	19.767	19.728	19.690
19.652	19.614	19.577	19.540	19.501
19.463	19.425	19.386	19.346	19.307
19.268	19.228	19.190	19.152	19.114
19.077	19.039	19.002	18.964	18.926
18.888	18.850	18.812	18.775	18.738
18.701	18.665	18.630	18.594	18.558
18.523	18.488	18.453	18.418	18.384
18.349	18.316	18.282	18.249	18.216
18.182	18.148	18.114	18.079	18.044
18.010	17.975	17.941	17.907	17.874
17.841	17.808	17.774	17.741	17.708
17.675	17.642	17.609	17.576	17.543
17.510	17.476	17.443	17.410	17.378
17.346	17.315	17.283	17.252	17.221
17.189	17.158	17.128	17.097	17.067

```
                        17.037     17.007     16.977     16.948     16.918
                        16.888     16.858     16.828     16.797     16.767
                        16.737     16.707     16.678     16.648     16.619
                        16.590     16.562     16.534     16.506     16.478
                        16.450     16.422     16.393     16.365     16.336
                        16.307     16.279     16.251     16.223     16.196
                        16.170     16.144     16.118     16.092     16.065
                        16.039     16.012     15.985     15.958     15.932
                        15.905     15.878     15.852     15.825     15.799
                        15.773     15.746     15.720     15.695     15.669
                        15.645     15.620     15.596     15.571     15.546
                        15.522     15.497     15.473     15.448     15.423
                        15.399     15.374     15.349     15.324     15.300
                        15.275     15.251     15.227     15.203     15.179
                        15.156     15.132     15.109     15.086     15.063
                        15.040     15.016     14.993     14.969     14.945
                        14.921     14.898     14.874     14.851     14.828
                        14.805     14.782     14.758     14.734     14.710
                        14.686     14.661     14.637     14.613     14.590
                        14.566     14.544     14.519     14.488     14.441
                        14.369     14.261     14.110     13.909     13.658
                        13.359     13.013     12.628     12.209     11.762
                        11.293     10.810     10.317      9.819      9.321
                         8.826      8.338      7.860      7.393      6.940
                         6.502      6.081      5.680      5.298      4.938
                         4.600      4.286      3.995      3.727      3.482
                         3.259      3.057      2.875      2.711      2.564
                         2.433      2.316      2.212      2.119      2.036
                         1.962      1.896      1.836      1.783      1.735
                         1.691      1.652      1.616      1.583      1.552
                         1.523      1.496      1.471      1.447      1.425
                         1.404      1.383      1.364      1.345      1.327
                         1.309      1.292      1.275      1.258      1.242
                         1.227      1.211      1.196      1.181      1.167
                         1.152      1.138      1.124      1.110      1.097
                         1.083      1.070      1.057      1.044      1.031
                         1.019      1.007       .994       .982       .970
                          .959       .947       .936       .924       .913
                          .902       .891       .880       .870       .859
                          .849       .839       .829       .819       .809
                          .799       .790       .780       .771       .762
                          .752       .743       .735       .726       .717
                          .709       .700       .692       .684       .675

PRINT HYD               ID=2  CODE=1
*
ADD HYD                 ID=2   HYD=AMOL_SV.1   I=2   II=11
PRINT HYD               ID=2   CODE=1
*
*  ROUTE 1700 FT SOUTH IN SNOW VISTA CHANNEL TO GIBSON
*  ASSUME COMPOSITE X-SECTION 150 FT ROW
COMPUTE RATING CURVE    CID=1  VN=1  NS=3 MIN EL=100   MAX EL=108.67
                        CS=0.024  FS=0.024  N=0.045  DISTX=35
                        N=.030   DISTX=77 N=0.045 DISTX=112
                        DISTX    EL      DISTX    EL
                        0       108.67    14      104
                        35      104.0     51      100
                        61      100       77      104
                        98       104      112     108.67
COMPUTE TRAVEL TIME     ID=15  RN=1  NVS=1  L=1700  S=0.024
ROUTE                   ID=15  HYD=AMOL_SV.2  INFLOW ID=2  DT=0.0
PRINT HYD               ID=15  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 00107
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=00107  AREA=0.08784 SQ MI
```

```
                        A=3   B=26  C=19  D=52
                        TP=0.165  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


* ROUTE FLOW 1150 FT ALONG GIBSON CORRIDOR IN 48" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1 SLP=0.019
                        DIA=4.0  N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=450  S=0.019
ROUTE                   ID=10  HYD=107.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 37
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=37  AREA=0.0301 SQ MI
                        A=0   B=25  C=20  D=55
                        TP=0.133 HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=2  HYD=37.1  I=10  II=2
*
* ROUTE COMBINED FLOW 1075 FT EAST IN 48" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1 SLP=.028
                        DIA=4.0  N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=450  S=0.028
ROUTE                   ID=10  HYD=37.1 INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1
*
* CALCULATE FLOW FROM SUB-BASIN 41a
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=41a  AREA=0.0187 SQ MI
                        A=0   B=25  C=20  D=55
                        TP=0.133 HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
* ROUTE FLOW ALONG STREET 550 FT SOUTH TO GIBSON
*
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=0   MAX EL=0.67
                        CS=0.0275  FS=0.0275  N=0.017  DIST=24
                        DIST      EL     DIST       EL
                        10       .67     10.1       0
                        33.9      .48     34       .67
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=550  S=0.011
ROUTE                   ID=11  HYD=41.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
*
* CALC FLOW FROM 36
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=36  AREA=0.0252 SQ MI
                        A=0   B=25  C=0  D=75
                        TP=0.133 HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
ADD HYD                 ID=2  HYD=37.1  I=11  II=2
PRINT HYD               ID=2  CODE=1
*
ADD HYD                 ID=2  HYD=37.1  I=10  II=2
PRINT HYD               ID=2  CODE=1

* ROUTE COMBINED FLOW 1150 FT EAST ALONG GIBSON IN 54" PIPE

COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1 SLP=.026
                        DIA=4.5  N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=450  S=0.026
ROUTE                   ID=10  HYD=37.1 INFLOW ID=2  DT=0.0
```

```
PRINT HYD                ID=10  CODE=1


* CALC FLOW FROM 35 AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=35  AREA=0.0458 SQ MI
                         A=0   B=10  C=0  D=90
                         TP=0.134 HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=2 HYD=35.1  I=10 II=2
PRINT HYD                ID=2  CODE=1


*  ROUTE COMBINED FLOW 500 FT EAST ALONG GIBSON IN 66" PIPE
*  DISCHARGE TO SNOW VISTA
COMPUTE RATING CURVE     CID=1  VN=1  CODE=-1 SLP=.022
                         DIA=5.5  N=.013
COMPUTE TRAVEL TIME      ID=10  RN=1  NVS=1  L=450  S=0.002
ROUTE                    ID=10  HYD=35.1 INFLOW ID=2  DT=0.0
PRINT HYD                ID=10  CODE=1

* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD NO=1b DA=0.0227 SQ MI
                         A=0  B=10  C=0  D=90
                         TP=0.183 HR
                         MASS RAINFALL=-1
PRINT HYD                ID=2 CODE=1

*  ADD TO FLOW IN CHANNEL
ADD HYD                  ID=15 HYD=1b.1  I=15 II=2
PRINT HYD                ID=15  CODE=1
*
ADD HYD                  ID=2 HYD=AMOL_SV.21  I=10 II=15
PRINT HYD                ID=2  CODE=1


* ROUTE FLOW 950 FT SOUTH ALONG CHANNEL TO NEXT ROADWAY CROSSING
*  ASSUME COMPOSITE X-SECTION 150 FT ROW
COMPUTE RATING CURVE     CID=1  VN=1  NS=3 MIN EL=100   MAX EL=108.67
                         CS=0.024  FS=0.024  N=0.045  DISTX=35
                         N=.030   DISTX=77 N=0.045 DISTX=112
                         DISTX    EL      DISTX    EL
                         0       108.67    14      104
                         35      104.0     51      100
                         61      100       77      104
                         98       104      112     108.67
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=950  S=0.024
ROUTE                    ID=11  HYD=AMOL_SV.3  INFLOW ID=2  DT=0.0
PRINT HYD                ID=11  CODE=1

*  CALC FLOW FROM 5b AND ADD TO CHANNEL
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK            CODE=1 BF=1.06
COMPUTE NM HYD           ID=2  HYD=5b  AREA=0.0049 SQ MI
                         a=0 b=25 c=20 d=55
                         TP=0.133 HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=2  HYD=37.1  I=11  II=2
PRINT HYD                ID=2  CODE=1

* ROUTE FLOW SOUTH IN CHANNEL 950 FT TO BLAKE ROAD
*
*  ASSUME COMPOSITE X-SECTION 150 FT ROW
COMPUTE RATING CURVE     CID=1  VN=1  NS=3 MIN EL=100   MAX EL=108.67
                         CS=0.024  FS=0.024  N=0.045  DISTX=35
```

```
                        N=.030   DISTX=77 N=0.045 DISTX=112
                        DISTX    EL      DISTX    EL
                        0        108.67    14       104
                        35       104.0     51       100
                        61       100       77       104
                        98        104      112      108.67
COMPUTE TRAVEL TIME     ID=16  RN=1  NVS=1  L=950  S=0.024
ROUTE                   ID=16  HYD=AMOL_SV.4  INFLOW ID=2  DT=0.0
PRINT HYD               ID=16  CODE=1

*  CALC FLOW FROM 33 AND ROUTE EAST 1075 FT TO 98TH STREET IN 36" PIPE
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=33  AREA=0.039 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133 HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1 SLP=.020
                        DIA=3  N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1075  S=0.020
ROUTE                   ID=10  HYD=33.1 INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1


* CALC FLOW FROM 34 AND ROUTE 250 FT SOUTH TO INTERSECT IN 36" PIPE
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=34  AREA=0.0401 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133 HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1 SLP=.020
                        DIA=3  N=.013
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=250  S=0.020
ROUTE                   ID=11  HYD=34.1 INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1


ADD HYD                 ID=2  HYD=37.1  I=11  II=10
PRINT HYD               ID=2  CODE=1

* ROUTE COMBINED FLOWS EAST 1250 FT IN 42" PIPE TO CHANNEL
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1 SLP=.029
                        DIA=3.5  N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1075  S=0.0040
ROUTE                   ID=10  HYD=33.2 INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1


ADD HYD                 ID=2  HYD=AMOL_SV.5   I=16  II= 10
*
* CALC FLOW FROM 5a AND ADD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=3  HYD=5A  AREA=0.0343 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133 HR  MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
ADD HYD                 ID=2  HYD=AMOL_SV5.1  I=2  II=3
*
* ROUTE FLOW 1300 FT SOUTH IN CHANNEL
*  ASSUME COMPOSITE X-SECTION 150 FT ROW
COMPUTE RATING CURVE    CID=1  VN=1  NS=3 MIN EL=100   MAX EL=108.67
```

```
                        CS=0.024  FS=0.024  N=0.045  DISTX=35
                        N=.030   DISTX=77 N=0.045 DISTX=112
                        DISTX    EL      DISTX    EL
                        0       108.67    14      104
                        35      104.0     51      100
                        61      100       77      104
                        98       104      112     108.67
COMPUTE TRAVEL TIME     ID=15  RN=1  NVS=1  L=1300  S=0.024
ROUTE                   ID=15  HYD=AMOL_SV.6  INFLOW ID=2  DT=0.0
PRINT HYD               ID=15  CODE=1
*  CALC FLOW FROM 9a AND ADD TO CHANNEL FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=3  HYD=9a  AREA=0.00245 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.137 HR  MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
ADD HYD                 ID=25  HYD=9a  I=15  II=3
PRINT HYD               ID=25  CODE=1
*
* ROUTE FLOW 850 FT EAST.  FLOW WILL BE ADDED TO SECATE BLANCO FLOW
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=108
                        CS=0.024  FS=0.024  N=0.013  DIST=62
                        DIST    EL      DIST    EL
                        0       108     16      100
                        46      100     62      108
COMPUTE TRAVEL TIME     ID=26  RN=1  NVS=1  L=850  S=0.024
ROUTE                   ID=26  HYD=AMOL_SV.7  INFLOW ID=25  DT=0.0
*
PRINT HYD               ID=26  CODE=1

**************************************************************************
*      EAST OF AMOLE ARROYO, SOUTH OF GIBSON, WEST OF UNSER.             *
**************************************************************************

*  CALC FLOW FROM 5c AND ROUTE 800 FT EAST THROUGH 6 IN ASSUMED 32FT STREET
SEDIMENT BULK           CODE=1 BF=1.02
COMPUTE NM HYD          ID=2  HYD=5c  AREA=0.0281 SQ MI
                        A=0  B=10  C=0  D=90
                        TP=0.144  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=0  MAX EL=.67
                        CS=0.033  FS=0.033  N=0.017  DIST=16
                        DIST    EL      DIST    EL
                        0       .67       0.1    0
                        15.9    .39       16     .67
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=350  S=0.033
ROUTE                   ID=10  HYD=11.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1


*  CALC FLOW FROM 6a AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 2%
SEDIMENT BULK           CODE=1 BF=1.02
COMPUTE NM HYD          ID=2  HYD=6a  AREA=0.0266 SQ MI
                        A=0  B=15  C=5  D=80
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

ADD HYD                 ID=10  HYD=6a.1  I=2  II=10
PRINT HYD               ID=10  CODE=1

* ROUTE EAST 600 FT TO UNSER  IN 36" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .03
                        DIA=3.0   N=.013
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=600  S=0.03
```

```
ROUTE                    ID=11  HYD=6a.2  INFLOW ID=10  DT=0.0
PRINT HYD                ID=11  CODE=1

* CALC FLOW FROM 7a AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 2%
SEDIMENT BULK            CODE=1 BF=1.02
COMPUTE NM HYD           ID=2  HYD=7a  AREA=0.0214 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.133  HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1

ADD HYD                  ID=11  HYD=7a.1  I=2  II=11
PRINT HYD                ID=11  CODE=1


* ROUTE FLOW SOUTH 1050 FT TO BLAKE INTERSECTION IN 48" PIPE
COMPUTE RATING CURVE     CID=1  VN=1  CODE=-1  SLP= .0124
                         DIA=4.0   N=.013
COMPUTE TRAVEL TIME      ID=12  RN=1  NVS=1  L=1050  S=0.0124
ROUTE                    ID=12  HYD=7a.2  INFLOW ID=11  DT=0.0
PRINT HYD                ID=12  CODE=1


* CALC FLOW FROM 7b AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 2%
SEDIMENT BULK            CODE=1 BF=1.02
COMPUTE NM HYD           ID=2  HYD=7b  AREA=0.0152 SQ MI
                         A=0  B=25  C=20  D=55
                         TP=0.144  HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1

ADD HYD                  ID=12  HYD= 7b.1  I=2  II=12
PRINT HYD                ID=12  CODE=1


* CALC FLOW FROM 5d AND ROUTE 800 FT THROUGH 6b IN ASSUMED 32' STREET
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 2%
SEDIMENT BULK            CODE=1 BF=1.02
COMPUTE NM HYD           ID=2  HYD=5d  AREA=0.0083 SQ MI
                         A=0  B=93  C=0  D=7
                         TP=0.133  HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1

COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=0  MAX EL=.67
                         CS=0.033  FS=0.033  N=0.017  DIST=16
                         DIST    EL      DIST    EL
                         0       .67       0.1    0
                         15.9    .39       16     .67
COMPUTE TRAVEL TIME      ID=10  RN=1  NVS=1  L=800  S=0.023
ROUTE                    ID=10  HYD=5d.1  INFLOW ID=2  DT=0.0
PRINT HYD                ID=10  CODE=1


* CALC FLOW FROM 6b AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 2%
SEDIMENT BULK            CODE=1 BF=1.02
COMPUTE NM HYD           ID=2  HYD=6b  AREA=0.0152 SQ MI
                         A=0  B=15  C=5  D=80
                         TP=0.133  HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1

ADD HYD                  ID=10   HYD=6b.1  I=2 II=10

* ROUTE FLOW EAST 800 FT TO UNSER IN 36" SD AND ADD TO ROUTED FLOW
COMPUTE RATING CURVE     CID=1  VN=1  CODE=-1  SLP= .023
                         DIA=3.0   N=.013
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=800  S=0.023
```

```
ROUTE                    ID=11  HYD=6b.1  INFLOW ID=10  DT=0.0
PRINT HYD                ID=11  CODE=1

ADD HYD                  ID=10  HYD=UNSERFLOW  I=11  II=12
PRINT HYD                ID=10  CODE=1
*
* ROUTE SOUTH 1050 FT TO AMOLE-HUBBEL IN 60" SD
COMPUTE RATING CURVE     CID=1  VN=1  CODE=-1  SLP= .016
                         DIA=5.0   N=.013
COMPUTE TRAVEL TIME      ID=45  RN=1  NVS=1  L=800  S=0.016
ROUTE                    ID=45  HYD=UNSERFLOW.1  INFLOW ID=10  DT=0.0
PRINT HYD                ID=45  CODE=1

* CALC FLOW FROM 9B AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 2%
SEDIMENT BULK            CODE=1 BF=1.02
COMPUTE NM HYD           ID=2  HYD=9b  AREA=0.03477 SQ MI
                         A=0  B=15  C=5  D=80
                         TP=0.139  HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1

ADD HYD                  ID=45  HYD=UNSERFLOW.2  I=45  II=2
PRINT HYD                ID=45  CODE=1

*******************************************************************************************
*S SACATE BLANCO BASIN                                                                    *
*  MODEL SACATE BLANCO BASIN WITH DEVLOPED IMPROVMENTS WITH                               *
*  ALL OFF SITE FLOW PASSING THROUGH.                                                     *
*******************************************************************************************

* CALC FLOW FROM 60104 AND ROUTE 2200 FT EAST THROUGH 60105
* BULK FLOWS 6%
SEDIMENT BULK            CODE=1  BF=1.06
COMPUTE NM HYD           ID=2  HYD=D60104  AREA=0.0391 SQ MI
                         A=0  B=41  C=19  D=40
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
* ROUTE FLOW FROM SUB-BASIN 60104 THROUGH SUB-BASIN 60105.
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=102  MAX EL=105
                         CS=0.036  FS=0.036  N=0.03  DIST=190
                         DIST    EL      DIST    EL
                         80      105     130     102
                         190     105
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=2200  S=0.036
ROUTE                    ID=11  HYD=D60104.5  INFLOW ID=2  DT=0.0
PRINT HYD                ID=11  CODE=1
*
* CALC FLOW FROM 60105 AND ADD TO ROUTED FLOW
* BULK FLOWS 6%
SEDIMENT BULK            CODE=1  BF=1.06
COMPUTE NM HYD           ID=2  HYD=D60105  AREA=0.0900 SQ MI
                         A=0   B=29  C=17  D=54
                         TP=0.165   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
ADD HYD                  ID=2   HYD 60105.1  I=11  II=2
*
* CALC FLOW FROM 60106 AND ROUTE 1750 FT EAST THROUGH 60105
* BULK FLOWS 6%
SEDIMENT BULK            CODE=1  BF=1.06
COMPUTE NM HYD           ID=3  HYD=D60106  AREA=0.0364 SQ MI
                         A=0   B=28  C=23  D=49
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=3  CODE=1


* ROUTE FLOW FROM SUB-BASIN 60106 THROUGH SUB-BASIN 60105.
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=101
```

```
                        CS=0.041  FS=0.041  N=0.03  DIST=102
                        DIST    EL      DIST    EL
                        0       101     1       100
                        101     100     102     101
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1750  S=0.041
ROUTE                   ID=11  HYD=D60106.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1


ADD HYD                 ID=2  HYD=60106.1  I=11  II=2
PRINT HYD               ID=2  CODE=1


* ROUTE FLOW EAST 1800 FT TO INTERSECTION IN 54" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= 0.023
                        DIA=4.5   N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1800  S=0.023
ROUTE                   ID=10  HYD=60106.2  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1


*CALC FLOW FROM 32c AND ROUTE 1000 FT SOUTH TO EDGE OF 32b IN 36" SD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=3  HYD=32c  AREA=0.03483 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=3  CODE=1

COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .017
                        DIA=3  N=.013
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1000  S=0.017
ROUTE                   ID=11  HYD=32c.1  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1


* CALC FLOW FROM 32b AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=32b  AREA=0.02319 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.153   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*
ADD HYD                 ID=11  HYD=32b.1  I=2 II=11
PRINT HYD               ID=11  CODE=1

* ROUTE FLOW 400 FT SOUTH TO INTERSECTION IN 42" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .017
                        DIA=3.5   N=.013
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=400  S=0.017
ROUTE                   ID=12  HYD=32b.2  INFLOW ID=11  DT=0.0
PRINT HYD               ID=12  CODE=1


* ADD TO FLOW FROM EAST
ADD HYD                 ID=10   HYD=32.1  I=10  II=12
PRINT HYD               ID=10  CODE=1

*CALC FLOW FROM 32a AND ADD TO ROUTED FLOW AT INTERSECTION
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=32a  AREA=0.03602 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.190   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
```

```
ADD HYD                 ID=10   HYD=32a.1  I=2  II=10
PRINT HYD               ID=10  CODE=1

* ROUTE FLOW EAST 1200 FT TO 98TH STREET IN 60" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .029
                        DIA=5   N=.013
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1200  S=0.029
ROUTE                   ID=11  HYD=32a.2  INFLOW ID=10  DT=0.0
PRINT HYD               ID=11  CODE=1


* CALC FLOW FROM 31b AND ROUTE 750 FT SOUTH TO INTERSECTION IN 36" SD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=31b  AREA=0.03475 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.15   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .005
                        DIA=3.0   N=.013
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=750  S=0.005
ROUTE                   ID=10  HYD=31b.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1

* CALC FLOW FROM 31a
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=31a  AREA=0.03742 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.144   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

* ADD 31a AND 31b TO FLOW FROM EAST
ADD HYD                 ID=11 HYD=31a.1 I=2 II=11
PRINT HYD               ID=11 CODE=1
ADD HYD                 ID=11 HYD=31b.2 I=10 II=11
PRINT HYD               ID=11 CODE=1

*  ROUTE FLOW 1500 FT EAST IN 72" SD TO UNNAMED STREET
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .032
                        DIA=6.0   N=.013
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=1500  S=0.032
ROUTE                   ID=12  HYD=31b.1  INFLOW ID=11  DT=0.0
PRINT HYD               ID=12  CODE=1

* CALC FLOW FROM 13 AND ADD TO 72" SD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=13  AREA=0.060 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.151   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

ADD HYD                 ID=12  HYD=13.1  I=2  II=12
PRINT HYD               ID=12  CODE=1

* ROUTE FLOW 300 FT NORTH IN 96" SD TO AMOLE CHANNEL
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .005
                        DIA=108   N=.013
COMPUTE TRAVEL TIME     ID=13  RN=1  NVS=1  L=300  S=0.005
ROUTE                   ID=13  HYD=13.2  INFLOW ID=12  DT=0.0
PRINT HYD               ID=13  CODE=1


*  CALC FLOW FROM 11 AND ROUTE THROUGH 10 IN ASSUMED 32' STREET
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
```

```
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=11  AREA=0.0335 SQ MI
                        A=0 B=30  C=0  D=70
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=0  MAX EL=.67
                        CS=0.033  FS=0.033  N=0.017  DIST=16
                        DIST    EL      DIST    EL
                        0       .67       0.1    0
                        15.9    .39       16     .67
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=350  S=0.033
ROUTE                   ID=10  HYD=11.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1
*
* CALC FLOW FROM 10 AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=10  AREA=0.0260 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=10  HYD=10.1  I=10  II=2
PRINT HYD               ID=10  CODE=1
*
* CALC FLOW FROM 12 AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=12  AREA=0.0207 SQ MI
                        A=0 B=25  C=20  D=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

ADD HYD                 ID=10  HYD=11.4  I=2  II=10
PRINT HYD               ID=10  CODE=1
*
* ADD ROUTED STREET FLOW  FROM NORTH TO 96" SD
ADD HYD                 ID=13  HYD=13.3 I=13  II=10
PRINT HYD               ID=13  CODE=1
*
*  ROUTE FLOW 1500 FT EAST TO AMOLE/SNOW VISTA CHANNEL IN CHANNEL
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=106
                        CS=0.024  FS=0.024  N=0.035  DIST=56
                        DIST    EL      DIST    EL
                        0       106     18      100
                        38      100     56      106
COMPUTE TRAVEL TIME     ID=14  RN=1  NVS=1  L=1500  S=0.016
ROUTE                   ID=14  HYD=13.4  INFLOW ID=13  DT=0.0
PRINT HYD               ID=14  CODE=1

*  ADD TO FLOW FROM AMOLE/SNOW VISTA CHANNEL
ADD HYD                 ID=26  HYD=AMOL_SV.8  I=26  II=14
PRINT HYD               ID=26  CODE=1

**********************************************************************
*  SACATE BLANCO BASIN, WEST EDGE OF RBSDP AREA                      *
**********************************************************************


*CALC FLOW FROM 60107a AND ROUTE 1600 FT EAST THROUGH 60107b
* BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=3  HYD=D60107A  AREA=0.0189 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
```

```
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=101
                        CS=0.041  FS=0.041  N=0.03  DIST=102
                        DIST    EL      DIST    EL
                        0       101     1       100
                        101     100     102     101
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1600  S=0.033
ROUTE                   ID=10  HYD=D60107A.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=10  CODE=1
*
*CALC FLOW FROM 60107b AND ADD TO ROUTED FLOW
* BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=3  HYD=D60107B  AREA=0.05648 SQ MI
                        A=0 B=28  C=18  D=54
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
ADD HYD                 ID=10  HYD=60107b.1  I=10  I=3
PRINT HYD               ID=10  CODE=1

* ROUTE FLOW 600 FT SOUTH IN 48" SD UNDER ASSUMED STREET AT WEST EDGE OF 28a AND 29a
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP=.005
                        DIA=4   N=.013
COMPUTE TRAVEL TIME     ID=20 RN=1  NVS=1  L=600  S=.005
ROUTE                   ID=20  HYD=D60107b.3 INFLOW ID=10  DT=0.0
PRINT HYD               ID=20  CODE=1

* CALCULATE THE FLOW FROM SUB-BASIN 60109.
* BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=19  HYD=D60109  AREA=0.0577 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=19  CODE=1

* CALCULATE THE FLOW FROM SUB-BASIN 60111.
* BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=2  HYD=D60111  AREA=0.0157 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

* ROUTE THE COMBINED FLOW FROM SUB-BASIN 60111 THROUGH SUB-BASIN 60109.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.034  FS=0.034  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=590  S=0.034
ROUTE                   ID=11  HYD=D60111.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
* ADD THE ROUTED FLOW FROM SUB-BASIN 60111.5 TO THE COMBINED FLOW
* FROM SUB-BASIN 60109.1.
ADD HYD                 ID=3  HYD=D60111.2  I=19  II=11
PRINT HYD               ID=3  CODE=1
*
*
* ROUTE THE COMBINED FLOW FROM SUB-BASIN 60111.2 THROUGH SUB-BASIN 60112.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.028  FS=0.028  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1000  S=0.028
ROUTE                   ID=11  HYD=D60111.6  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
```

```
* CALC FLOW FROM 60112
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=2  HYD=60112  AREA=0.0432 SQ MI
                        A=0   B=30  C=4  D=66
                        TP=0.164   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

* ADD TO ROUTED FLOW IN SD FROM NORTH
ADD HYD                 ID=10  HYD=60112.1  I=2 II=11
PRINT HYD               ID=10  CODE=1

* ROUTE FLOW 600 FT SOUTH IN 54" SD UNDER ASSUMED STREET AT WEST EDGE OF 28a AND 29a
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP=.005
                        DIA=4.5   N=.013
COMPUTE TRAVEL TIME     ID=11 RN=1  NVS=1  L=600  S=.005
ROUTE                   ID=11  HYD=D60112.1 INFLOW ID=10  DT=0.0
PRINT HYD               ID=11  CODE=1

* ROUTE FLOW 1650 FT EAST IN 54" SD TO INTERSECTION
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP=.032
                        DIA=4.5   N=.013
COMPUTE TRAVEL TIME     ID=12 RN=1  NVS=1  L=1650  S=.032
ROUTE                   ID=12  HYD=D60112.3 INFLOW ID=11  DT=0.0
PRINT HYD               ID=12  CODE=1

* CALC FLOW FROM 28a AND ROUTE THROUGH 29a IN ASSUMED 32' STREET L=1000
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=28a  AREA=0.0243 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=0  MAX EL=.67
                        CS=0.028  FS=0.028  N=0.017  DIST=16
                        DIST    EL      DIST    EL
                        0       .67       0.1    0
                        15.9    .39       16     .67
COMPUTE TRAVEL TIME     ID=10  RN=1  NVS=1  L=1000  S=0.028
ROUTE                   ID=10  HYD=28a.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1


* CALC FLOW FROM 29a AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=29a  AREA=0.0269 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=2  HYD=29a.1  I=10 II=2
PRINT HYD               ID=2  CODE=1
*
* ROUTE COMBINED FLOW 600 FT SOUTH TO INTERSECTION IN 54" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .005
                        DIA=4.5   N=.013
COMPUTE TRAVEL TIME     ID=10 RN=1  NVS=1  L=600  S=0.005
ROUTE                   ID=10  HYD=11.5  INFLOW ID=2  DT=0.0

* ADD TO FLOW FROM WEST
ADD HYD                 ID=13  HYD=29a.2  I=10  II=12
PRINT HYD               ID=13  CODE =1


*  CALC FLOW FROM 28b AND ROUTE 850 FT EAST THROUGH 29b IN ASSUMED 32' STREET
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
```

```
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=28b  AREA=0.0229 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=0  MAX EL=.67
                        CS=0.033  FS=0.033  N=0.017  DIST=16
                        DIST    EL      DIST    EL
                        0       .67       0.1    0
                        15.9    .39       16     .67
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=850  S=0.033
ROUTE                   ID=11  HYD=28b.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1


* CALC FLOW FROM 29b AND ADD TO ROUTED FLOW FROM 28b
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=29b  AREA=0.0178 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

ADD HYD                 ID=11  HYD=29b.1  I=2  II=11
PRINT HYD               ID=11  CODE=1

                              .
* ADD TO FLOW FROM WEST
ADD HYD                 ID=13  HYD=29b.2  I=11  II=13
PRINT HYD               ID=13  CODE =1

* CALC FLOW FROM 27b AND ROUTE FLOW 950 FT NORTH IN 36" SD
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=27b  AREA=0.037 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1

COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .021
                        DIA=3   N=.013
COMPUTE TRAVEL TIME     ID=10 RN=1  NVS=1  L=750  S=0.021
ROUTE                   ID=10  HYD=27b.1  INFLOW ID=2  DT=0.0
PRINT HYD               ID=10  CODE=1

* ADD TO FLOW FROM WEST
ADD HYD                 ID=13  HYD=27b.2  I=10  II=13
PRINT HYD               ID=13  CODE =1

* CALC FLOW FROM 27a AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=27a  AREA=0.0126 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


* ADD FLOW FROM 27a
ADD HYD                 ID=13  HYD=27a.1  I=2  II=13
PRINT HYD               ID=13  CODE=1


* ROUTE FLOW 850 FT EAST TOP 98TH STREET IN 60" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .031
```

```
                        DIA=5   N=.013
COMPUTE TRAVEL TIME     ID=14 RN=1  NVS=1  L=850  S=0.031
ROUTE                   ID=14  HYD=27a.1  INFLOW ID=13  DT=0.0
PRINT HYD               ID=14  CODE=1


* CALC FLOW FROM 30 AND ADD TO ROUTED FLOW
* GENERATION OF SEDIMENT LIKELY, BULK FLOWS 6%
SEDIMENT BULK           CODE=1 BF=1.06
COMPUTE NM HYD          ID=2  HYD=30  AREA=0.0467 SQ MI
                        a=0 b=25 c=20 d=55
                        TP=0.139   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1


ADD HYD                 ID=10  HYD=60112.6  I=2 II=14
PRINT HYD               ID=10  CODE=1



*  ROUTE FLOW 900 FT EAST TO INTERSECTION IN 72" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .011
                        DIA=6   N=.013
COMPUTE TRAVEL TIME     ID=11 RN=1  NVS=1  L=850  S=0.011
ROUTE                   ID=11  HYD=60112.8  INFLOW ID=10  DT=0.0
PRINT HYD               ID=11  CODE=1


*  ROUTE FLOW  800 FT SOUTH TO SACATE BLANCO CHANNEL IN 72" SD
COMPUTE RATING CURVE    CID=1  VN=1  CODE=-1  SLP= .0175
                        DIA=6   N=.013
COMPUTE TRAVEL TIME     ID=21 RN=1  NVS=1  L=850  S=0.0175
ROUTE                   ID=21  HYD=60112.9  INFLOW ID=11  DT=0.0
PRINT HYD               ID=21  CODE=1
```

```
*#########################################################################
*  SACATE BLANCO BASIN, WEST EDGE OF RBSDP AREA                          #
*#########################################################################
```

```
* CALCULATE THE FLOW FROM SUB-BASIN 60116.
* BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BF=1.06
COMPUTE NM HYD          ID=3  HYD=D60116  AREA=0.0837 SQ MI
                        A=0  B=28  C=23  D=49
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
*
* ROUTE THE FLOW FROM SUB-BASIN 60116 THROUGH SUB-BASIN 60117,
COMPUTE RATING CURVE    CID=1  VN=1· NS=1  MIN EL=100  MAX EL=105.5
                        CS=0.028  FS=0.028  N=0.03  DIST=18
```

AMOLE ARROYO AND HUBBELL LAKE SYSTEM
AHYMO INPUT FILE
EXISTING CONDITIONS

```
START                0.0 HOURS    PC=0   PL=-1
*S
*S       AMOLE ARROYO AND HUBBLE LAKE SYSTEM
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S FILE NAME: AA100D1B.DAT  (EXISTING CONDITIONS, MODIFIED AREAS OF TRUNCATED BASINS)
*S BY: URSGWC
*S LAST REVISION:2-27-2000


*S  * MODEL REFLECTS RPSDP-DPM UTIMATE DEVELOPMENT WITH EXISTING CONDITIONS TO THE WEST



*************************************************************************
*S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE AMOLE ARROYO,
*S FROM WESTGATE DAM THROUGH TO THE HUBBLE LAKE DETENTION FACILITY.  THIS RUN
*S USES THE RECALL HYD COMMAND TO INPUT HYDOGRAPHS FROM POWERLINE CHANNEL (PL),
*S SNOW VISTA CHANNEL (SV), SACATE BLANCO CHANNEL (SB), AMOLE DEL NORTE CHANNEL
*S (AN), RIO BRAVO (RB), AND THE BORREGA CHANNEL (BR).  THIS RUN ALSO CALCULATES
*S RUNOFF FROM SUB-BASINS ADJACENT TO THE CHANNEL THAT ARE NOT INCLUDED IN THE
*S ABOVE MENTIONED HYDROGRAPHS.
*************************************************************************
*S ANALYSIS ASSUMPTIONS:
*************************************************************************
*S 1. ALL LAND IN THIS BASIN IS MODELED AS EXISTING CONDITION.
*S
*S 2. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
*S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
*S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
*S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
*S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDENTIAL
*S    DEVELOPMENTS.
*S
*************************************************************************
*S100 YEAR 24HR STORM EXISTING CONDITION
RAINFALL             TYPE=2  0.0  1.87  2.20  2.66    DT=0.05
** 10 YEAR 24HR STORM EXISTING CONDITION
**RAINFALL            TYPE=2  0.0  1.25  1.47  1.77    DT=0.05
**  2 YEAR 24HR STORM EXISTING CONDITION
**RAINFALL            TYPE=2  0.0  0.74  0.95  1.15    DT=0.05
*************************************************************************
*S RECALL OUTFLOW HYDROGRAPH FROM THE WESTGATE DAM
RECALL HYD          ID= 5 HYD=WG100E1B.HYD  DT=  .050000 HRS DA=  18.6836 SQ MI
                    PEAK=     73.148CFS  RO=  .1679 INCHES  NO PTS=600
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .011       .111
                          .416       .925     22.054     25.867     30.408
                        34.973     38.658     41.456     44.088     45.721
                        47.884     49.489     51.253     52.410     53.506
                        54.531     55.335     56.087     56.812     57.519
                        58.133     58.642     59.147     59.646     60.137
                        60.615     61.080     61.470     61.848     62.217
                        62.577     62.931     63.279     63.620     63.957
                        64.288     64.540     64.751     64.959     65.164
                        65.367     65.568     65.767     65.963     66.158
                        66.350     66.541     66.730     66.917     67.103
                        67.243     67.382     67.520     67.657     67.792
                        67.927     68.060     68.193     68.324     68.454
                        68.584     68.712     68.839     68.964     69.089
                        69.212     69.334     69.455     69.574     69.677
                        69.775     69.872     69.968     70.063     70.157
```

70.250	70.341	70.431	70.519	70.606
70.691	70.774	70.856	70.936	71.014
71.091	71.166	71.240	71.311	71.382
71.450	71.516	71.581	71.643	71.703
71.751	71.798	71.844	71.887	71.929
71.969	72.007	72.043	72.078	72.111
72.143	72.173	72.202	72.229	72.257
72.283	72.309	72.334	72.359	72.382
72.406	72.429	72.451	72.473	72.494
72.515	72.535	72.555	72.574	72.593
72.611	72.629	72.646	72.663	72.680
72.696	72.711	72.726	72.741	72.755
72.769	72.782	72.795	72.808	72.820
72.833	72.844	72.856	72.867	72.878
72.888	72.899	72.909	72.919	72.928
72.937	72.946	72.955	72.963	72.972
72.980	72.987	72.995	73.002	73.009
73.016	73.023	73.029	73.036	73.042
73.048	73.053	73.059	73.064	73.069
73.074	73.079	73.083	73.088	73.092
73.096	73.100	73.103	73.107	73.110
73.114	73.117	73.120	73.122	73.125
73.128	73.130	73.132	73.134	73.136
73.138	73.139	73.141	73.142	73.143
73.145	73.145	73.146	73.147	73.147
73.148	73.148	73.148	73.148	73.148
73.148	73.148	73.147	73.146	73.146
73.145	73.144	73.143	73.142	73.140
73.139	73.138	73.136	73.134	73.132
73.130	73.129	73.126	73.124	73.122
73.120	73.117	73.115	73.112	73.109
73.107	73.104	73.101	73.098	73.095
73.092	73.089	73.085	73.082	73.079
73.075	73.072	73.068	73.064	73.060
73.057	73.053	73.049	73.044	73.040
73.036	73.032	73.027	73.023	73.018
73.014	73.009	73.004	72.999	72.994
72.990	72.985	72.980	72.974	72.969
72.964	72.959	72.953	72.948	72.943
72.937	72.932	72.926	72.920	72.915
72.909	72.903	72.897	72.891	72.886
72.880	72.874	72.868	72.861	72.855
72.849	72.843	72.837	72.830	72.824
72.818	72.811	72.805	72.798	72.792
72.785	72.779	72.772	72.765	72.759
72.752	72.745	72.738	72.731	72.724
72.718	72.711	72.704	72.697	72.690
72.683	72.675	72.668	72.661	72.654
72.647	72.640	72.632	72.625	72.618
72.610	72.603	72.596	72.588	72.581
72.573	72.566	72.559	72.551	72.543
72.536	72.528	72.521	72.513	72.506
72.498	72.490	72.483	72.475	72.467
72.459	72.452	72.444	72.436	72.428
72.420	72.413	72.405	72.397	72.389
72.381	72.373	72.365	72.357	72.350
72.342	72.334	72.326	72.318	72.310
72.302	72.294	72.286	72.278	72.270
72.261	72.253	72.245	72.237	72.229
72.221	72.213	72.205	72.196	72.188
72.180	72.172	72.164	72.156	72.147
72.139	72.131	72.123	72.114	72.106
72.098	72.090	72.081	72.073	72.065
72.056	72.048	72.040	72.031	72.023
72.015	72.006	71.998	71.989	71.981
71.973	71.964	71.956	71.947	71.939
71.931	71.922	71.914	71.905	71.897

```
                        71.888     71.880     71.871     71.863     71.854
                        71.846     71.837     71.829     71.820     71.812
                        71.803     71.795     71.786     71.778     71.769
                        71.761     71.752     71.743     71.735     71.726
                        71.718     71.709     71.700     71.690     71.680
                        71.670     71.659     71.649     71.638     71.628
                        71.618     71.607     71.597     71.587     71.576
                        71.566     71.555     71.545     71.535     71.524
                        71.514     71.503     71.493     71.482     71.472
                        71.462     71.451     71.441     71.430     71.420
                        71.409     71.399     71.388     71.378     71.367
                        71.357     71.346     71.336     71.325     71.315
                        71.304     71.294     71.283     71.273     71.262
                        71.252     71.241     71.231     71.220     71.210
                        71.199     71.188     71.178     71.167     71.157
                        71.146     71.135     71.125     71.114     71.103
                        71.093     71.082     71.071     71.060     71.050
                        71.039     71.028     71.018     71.007     70.996
                        70.985     70.974     70.964     70.953     70.942
                        70.931     70.920     70.910     70.899     70.888
                        70.877     70.866     70.856     70.845     70.834
                        70.823     70.812     70.801     70.790     70.780
                        70.769     70.758     70.747     70.736     70.725
                        70.715     70.704     70.693     70.682     70.671
                        70.660     70.649     70.639     70.628     70.617
                        70.606     70.595     70.584     70.573     70.562
                        70.552     70.541     70.530     70.519     70.508
                        70.497     70.486     70.476     70.465     70.454
                        70.443     70.432     70.421     70.410     70.399
                        70.389     70.378     70.367     70.356     70.345
                        70.334     70.323     70.312     70.301     70.291
                        70.280     70.269     70.258     70.247     70.236
                        70.225     70.214     70.204     70.193     70.182
*S  HYD NO. WG100E1B.HYD IS ***** AP 01 *****
PRINT HYD               ID=5  CODE=1
*S ROUTE FLOW TO AP02
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100  MAX EL=104
                        CS=0.03  FS=0.03  N=0.03  DIST=108
                        DIST    EL      DIST    EL
                        0       104     4       100
                        104     100     108     104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2300  S=0.03
ROUTE                   ID=11  HYD=WG101.5  INFLOW ID=5  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE FLOW FROM SUB-BASIN 00102
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00102  AREA=0.1119  SQ MI
                        A=77  B=0  C=23  D=0
                        TP=0.168  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN WG101.5 TO THE FLOW FROM SUB-BASIN 00102.
ADD HYD                 ID=3  HYD= 00102.1  I=11  II=2
*S RECALL OUTFLOW HYDROGRAPH FROM POWERLINE CHANNEL
RECALL HYD          ID=10  HYD=PL100E1B.HYD
                    DT=  .050000 HRS   DA=   1.6923 SQ MI
                    PEAK=    501.274CFS  RO=  .7411 INCHES  NO PTS=600
                    FLOW RATES
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .247      5.816     27.649
                         87.085    211.645    354.973    422.221    407.083
                        363.108    335.159    342.670    386.202    444.828
                        486.722    501.274    498.569    486.300    468.227
```

445.682	420.443	394.263	368.202	343.498
320.399	298.063	276.845	257.544	240.350
225.208	211.395	198.179	184.323	169.873
156.514	145.348	136.475	129.305	123.198
117.726	112.545	107.334	102.020	96.374
89.978	83.422	77.660	73.067	69.547
66.704	64.190	61.818	59.501	57.189
54.852	52.499	50.175	47.930	45.800
43.792	41.902	40.120	38.439	36.863
35.403	34.069	32.865	31.786	30.837
30.018	29.309	28.697	28.157	27.671
27.237	26.850	26.503	26.191	25.906
25.640	25.390	25.150	24.920	24.697
24.478	24.263	24.050	23.840	23.632
23.425	23.220	23.016	22.814	22.614
22.415	22.218	22.022	21.828	21.636
21.445	21.255	21.068	20.881	20.697
20.513	20.332	20.151	19.973	19.796
19.620	19.446	19.273	19.102	18.933
18.764	18.598	18.433	18.269	18.106
17.946	17.786	17.628	17.471	17.316
17.162	17.010	16.859	16.710	16.562
16.416	16.272	16.129	15.988	15.849
15.712	15.577	15.444	15.314	15.186
15.059	14.934	14.810	14.687	14.565
14.443	14.322	14.201	14.081	13.961
13.842	13.724	13.606	13.489	13.372
13.257	13.142	13.028	12.915	12.803
12.692	12.581	12.472	12.364	12.256
12.150	12.044	11.939	11.836	11.733
11.631	11.530	11.430	11.331	11.232
11.135	11.038	10.943	10.848	10.754
10.661	10.568	10.477	10.386	10.296
10.207	10.119	10.031	9.945	9.859
9.773	9.689	9.605	9.522	9.440
9.359	9.278	9.198	9.119	9.040
8.962	8.885	8.808	8.732	8.657
8.583	8.509	8.436	8.363	8.291
8.220	8.150	8.080	8.010	7.942
7.873	7.806	7.739	7.673	7.607
7.542	7.477	7.413	7.350	7.287
7.225	7.163	7.102	7.041	6.981
6.921	6.862	6.804	6.746	6.688
6.631	6.575	6.519	6.464	6.410
6.357	6.305	6.255	6.206	6.159
6.114	6.071	6.029	5.989	5.950
5.913	5.876	5.841	5.806	5.772
5.739	5.707	5.674	5.643	5.611
5.580	5.550	5.519	5.489	5.459
5.429	5.400	5.370	5.341	5.312
5.283	5.255	5.226	5.198	5.170
5.142	5.114	5.086	5.058	5.031
5.004	4.977	4.950	4.923	4.896
4.870	4.844	4.817	4.791	4.766
4.740	4.714	4.689	4.663	4.638
4.613	4.588	4.564	4.539	4.515
4.490	4.466	4.442	4.418	4.395
4.371	4.347	4.324	4.301	4.278
4.255	4.232	4.209	4.187	4.164
4.142	4.120	4.098	4.076	4.054
4.032	4.010	3.989	3.968	3.946
3.925	3.904	3.883	3.863	3.842
3.822	3.801	3.781	3.761	3.741
3.721	3.701	3.681	3.662	3.642
3.623	3.603	3.584	3.565	3.546
3.527	3.509	3.490	3.472	3.453
3.435	3.417	3.399	3.380	3.363

```
                        3.345      3.327      3.309      3.292      3.275
                        3.257      3.240      3.223      3.206      3.189
                        3.172      3.155      3.139      3.122      3.106
                        3.089      3.073      3.057      3.041      3.025
                        3.009      2.993      2.977      2.962      2.946
                        2.931      2.915      2.900      2.885      2.870
                        2.855      2.840      2.825      2.810      2.796
                        2.781      2.766      2.752      2.738      2.723
                        2.709      2.695      2.681      2.667      2.653
                        2.639      2.626      2.612      2.598      2.585
                        2.571      2.558      2.545      2.532      2.518
                        2.505      2.492      2.480      2.467      2.454
                        2.441      2.429      2.416      2.404      2.391
                        2.379      2.367      2.354      2.342      2.330
                        2.318      2.306      2.294      2.283      2.271
                        2.259      2.248      2.236      2.225      2.213
                        2.202      2.191      2.179      2.168      2.157
                        2.146      2.135      2.124      2.113      2.103
                        2.092      2.081      2.071      2.060      2.050
                        2.039      2.029      2.019      2.008      1.998
                        1.988      1.978      1.968      1.958      1.948
                        1.938      1.928      1.919      1.909      1.899
                        1.890      1.880      1.870      1.861      1.851
                        1.842      1.832      1.823      1.813      1.803
                        1.794      1.784      1.774      1.764      1.755
                        1.745      1.735      1.725      1.716      1.706
                        1.696      1.687      1.677      1.667      1.658
                        1.648      1.639      1.629      1.620      1.610
                        1.601      1.592      1.583      1.573      1.564
                        1.555      1.546      1.537      1.528      1.519
                        1.511      1.502      1.493      1.484      1.476
                        1.467      1.459      1.450      1.442      1.433
                        1.425      1.417      1.408      1.400      1.392
                        1.384      1.376      1.368      1.360      1.352
                        1.344      1.336      1.329      1.321      1.313
                        1.306      1.298      1.290      1.283      1.276
                        1.268      1.261      1.253      1.246      1.239
                        1.232      1.224      1.217      1.210      1.203
                        1.196      1.189      1.182      1.175      1.169
                        1.162      1.155      1.148      1.142      1.135
                        1.128      1.122      1.115      1.109      1.102
                        1.096      1.090      1.083      1.077      1.071
                        1.064      1.058      1.052      1.046      1.040
                        1.034      1.028      1.022      1.016      1.010
PRINT HYD               ID=10  CODE=1
*S
*S ADD THE RECALLED HYD FROM POWERLINE TO THE ROUTED FLOW
*S FROM SUB-BASIN 00102.1
*S HYD NO. 102.2 IS ***** AP 02 *****
ADD HYD                 ID=4  HYD=00102.2  I=10  II=3
*S ROUTE FLOW IN THE AMOLE ARROYO TO 900 FEET EAST OF POWERLINE CHANNEL.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=103
                        CS=0.0178  FS=0.0178  N=0.03  DIST=176
                        DIST    EL      DIST    EL
                        0       103     1       100
                        175     100     176     103
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=900  S=0.0178
ROUTE                   ID=12  HYD=00102.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=12  CODE=1
*S
*S CALCULATE FLOW FROM SUB-BASIN 00103A
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00103A  AREA=0.0717  SQ MI
                        A=96   B=0  C=4  D=0
                        TP=0.142  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
```

```
*S ROUTE FLOW THROUGH SUB-BASIN 00103B TO THE AMOLE ARROYO.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=103
                        CS=0.00358  FS=0.00358  N=0.03  DIST=17
                        DIST    EL      DIST    EL
                        0       103     6       100
                        11      100     17      103
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2790  S=0.00358
ROUTE                   ID=11  HYD=00103A.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE FLOW FROM SUB-BASIN 00103B
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00103B  AREA=0.1207 SQ MI
                        A=100   B=0   C=0  D=0
                        TP=0.250  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTE FLOW FROM SUB-BASIN 00103A.5 TO THE FLOW
*S FROM SUB-BASIN 00103B.
ADD HYD                 ID=3  HYD=00103B.1  I=11  II=2
*S ADD THE COMBINED FLOW FROM SUB-BASIN 00103B.1 TO THE ROUTED FLOW
*S IN THE AMOLE ARROYO.
ADD HYD                 ID=4  HYD=00103B.2  I=12  II=3
*S ROUTE FLOW FROM SUB-BASIN 00103B.2 IN THE AMOLE ARROYO TO
*S DELGADO STREET.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0323  FS=0.0323  N=0.03  DIST=104
                        DIST    EL      DIST    EL
                        0       104     4       100
                        100     100     104     104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=930  S=0.0323
ROUTE                   ID=11  HYD=00103B.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=11  CODE=1
*S
*S CALCULATE FLOW FROM SUB-BASIN 00104
*S GENERATION OF SEDIMENT POSSIBLE IN PARTLY DEVELOPED SUB-BASIN,
*S BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BK=1.06
COMPUTE NM HYD          ID=2  HYD=00104  AREA=0.0183 SQ MI
                        A=12   B=20  C=42  D=26
                        TP=0.133  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE FLOW FROM SUB-BASIN 00104 TO THE ROUTED FLOW IN THE AMOLE ARROYO.
*S HYD NO. 00104.1 IS ***** AP 02.1 *****
ADD HYD                 ID=3  HYD=00104.1  I=11  II=2
*S ROUTE FLOW FROM SUB-BASIN 00104 IN THE AMOLE ARROYO TO 2220 FEET WEST
*S FOR SNOW VISTA CHANNEL
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0301  FS=0.0301  N=0.03  DIST=58
                        DIST    EL      DIST    EL
                        0       104     4       100
                        54      100     58      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2990  S=0.0301
ROUTE                   ID=11  HYD=00104.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S
*S CALCULATE FLOW FROM SUB-BASIN 00105
*S GENERATION OF SEDIMENT POSSIBLE IN PARTLY DEVELOPED SUB-BASIN,
*S BULK FLOWS 6%
SEDIMENT BULK           CODE=1  BK=1.06
COMPUTE NM HYD          ID=2  HYD=00105  AREA=0.0739SQ MI
                        A=58   B=3  C=17  D=22
                        TP=0.150  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE FLOW FROM SUB-BASIN 00105 TO THE ROUTED FLOW IN THE AMOLE ARROYO.
*S HYD NO. 00105.1 IS ***** AP 02.2 *****
ADD HYD                 ID=3  HYD=00105.1  I=11  II=2
*S ROUTE FLOW FROM SUB-BASIN 00105 IN THE AMOLE ARROYO TO SNOW VISTA CHANNEL.
```

```
COMPUTE RATING CURVE     CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                         CS=0.0293  FS=0.0293  N=0.03  DIST=58
                         DIST     EL      DIST     EL
                         0        104     4        100
                         54       100     58       104
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=2220  S=0.0293
ROUTE                    ID=11  HYD=00105.5  INFLOW ID=3  DT=0.0
PRINT HYD                ID=11  CODE=1
*S
*S CALCULATE FLOW FROM SUB-BASIN 00106
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK            CODE=1  BK=1.15
COMPUTE NM HYD           ID=2  HYD=00106  AREA=0.0415 SQ MI
                         A=98  B=0 C=2  D=0
                         TP=0.133  HR  MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
*S ADD THE FLOW FROM SUB-BASIN 00106 TO THE ROUTED FLOW IN THE AMOLE ARROYO.
ADD HYD                  ID=3  HYD=00106.1  I=11  II=2
*S RECALL OUTFLOW HYDROGRAPH FROM SNOW VISTA CHANNEL.
RECALL HYD          ID= 2  HYD=SV100E1B.HYD
                    DT=  .050000 HRS   DA=   1.8022 SQ MI
                    PEAK=   1828.072CFS  RO= 1.0995 INCHES  NO PTS=600
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .001       .002       .004       .007
                          .013       .020       .030       .045       .095
                          .313      1.312      6.889     44.948    258.400
                       879.304   1561.614   1828.072   1706.684   1456.393
                      1225.143   1044.862    913.187    818.920    749.081
                       693.023    643.477    595.550    542.234    482.322
                       421.680    366.585    320.567    282.640    252.204
                       228.458    207.850    188.506    171.731    158.136
                       146.862    136.840    126.756    116.370    107.097
                        99.797     94.166     89.701     86.003     82.805
                        79.943     77.315     74.859     72.551     70.388
                        68.372     66.481     64.495     62.212     59.658
                        57.188     55.097     53.382     51.981     50.778
                        49.696     48.706     47.802     46.972     46.198
                        45.463     44.746     44.028     43.303     42.578
                        41.864     41.169     40.498     39.852     39.231
                        38.637     38.070     37.527     37.000     36.479
                        35.947     35.387     34.778     34.101     33.340
                        32.492     31.564     30.573     29.539     28.481
                        27.416     26.362     25.334     24.343     23.401
                        22.517     21.697     20.959     20.289     19.658
                        19.088     18.580     18.113     17.682     17.290
                        16.938     16.629     16.362     16.137     15.950
                        15.800     15.681     15.590     15.520     15.469
                        15.432     15.404     15.384     15.368     15.354
                        15.341     15.328     15.314     15.299     15.281
                        15.262     15.241     15.217     15.191     15.163
                        15.132     15.099     15.064     15.028     14.990
                        14.950     14.909     14.868     14.825     14.782
                        14.739     14.696     14.653     14.610     14.567
                        14.523     14.479     14.435     14.390     14.346
                        14.302     14.258     14.216     14.174     14.133
                        14.092     14.051     14.011     13.971     13.931
                        13.890     13.849     13.809     13.768     13.728
                        13.689     13.650     13.611     13.573     13.535
                        13.497     13.459     13.422     13.386     13.349
                        13.313     13.276     13.239     13.202     13.166
                        13.129     13.093     13.057     13.021     12.987
                        12.953     12.919     12.886     12.853     12.821
                        12.789     12.757     12.725     12.693     12.661
                        12.629     12.596     12.562     12.529     12.495
```

12.461	12.428	12.394	12.362	12.329
12.297	12.266	12.234	12.204	12.173
12.143	12.114	12.084	12.055	12.026
11.997	11.969	11.941	11.914	11.887
11.859	11.832	11.805	11.778	11.751
11.723	11.695	11.667	11.639	11.611
11.583	11.555	11.528	11.500	11.473
11.446	11.419	11.392	11.365	11.338
11.312	11.285	11.259	11.233	11.208
11.182	11.157	11.131	11.106	11.080
11.056	11.031	11.008	10.984	10.960
10.935	10.911	10.887	10.863	10.840
10.816	10.793	10.770	10.747	10.724
10.700	10.677	10.654	10.631	10.608
10.585	10.562	10.539	10.517	10.495
10.473	10.451	10.430	10.408	10.387
10.366	10.345	10.324	10.302	10.281
10.260	10.239	10.219	10.199	10.180
10.161	10.142	10.122	10.102	10.081
10.060	10.039	10.017	9.995	9.973
9.951	9.930	9.909	9.888	9.868
9.848	9.828	9.808	9.788	9.767
9.746	9.725	9.704	9.683	9.662
9.641	9.621	9.600	9.579	9.558
9.536	9.514	9.492	9.470	9.448
9.427	9.406	9.385	9.364	9.344
9.323	9.302	9.281	9.259	9.237
9.216	9.194	9.173	9.152	9.131
9.111	9.091	9.070	9.050	9.030
9.009	8.989	8.968	8.948	8.927
8.906	8.886	8.865	8.845	8.825
8.805	8.786	8.766	8.747	8.728
8.709	8.690	8.671	8.652	8.633
8.615	8.596	8.578	8.560	8.541
8.522	8.504	8.485	8.466	8.447
8.428	8.410	8.391	8.373	8.354
8.336	8.318	8.301	8.284	8.266
8.248	8.229	8.208	8.185	8.161
8.135	8.107	8.077	8.047	8.016
7.985	7.954	7.923	7.893	7.862
7.831	7.801	7.772	7.743	7.715
7.687	7.661	7.635	7.609	7.585
7.560	7.537	7.514	7.491	7.470
7.448	7.428	7.407	7.387	7.367
7.347	7.327	7.307	7.287	7.267
7.248	7.228	7.208	7.189	7.170
7.151	7.132	7.114	7.095	7.078
7.060	7.043	7.025	7.008	6.991
6.974	6.957	6.940	6.923	6.906
6.888	6.871	6.854	6.838	6.821
6.805	6.789	6.773	6.756	6.739
6.722	6.705	6.689	6.672	6.656
6.641	6.626	6.610	6.590	6.561
6.515	6.444	6.340	6.199	6.020
5.806	5.561	5.292	5.006	4.708
4.407	4.107	3.814	3.532	3.264
3.012	2.778	2.562	2.364	2.185
2.022	1.876	1.746	1.629	1.525
1.433	1.351	1.279	1.215	1.158
1.108	1.064	1.024	.989	.957
.929	.904	.881	.860	.841
.823	.807	.791	.777	.764
.751	.739	.727	.716	.706
.695	.685	.676	.666	.657
.648	.640	.631	.623	.614
.606	.598	.590	.583	.575
.568	.560	.553	.546	.539

```
                        .532        .525        .518        .511        .505
                        .498        .492        .486        .479        .473
                        .467        .461        .455        .449        .443
                        .438        .432        .426        .421        .415
                        .410        .405        .399        .394        .389
                        .384        .379        .374        .369        .365
                        .360        .355        .351        .346        .342
                        .337        .333        .329        .324        .320
                        .316        .312        .308        .304        .300
PRINT HYD               ID=2  CODE=1
*S
*S ADD THE OUTFLOW HYDROGRAPH FROM SNOW VISTA CHANNEL TO THE FLOW
*S IN THE AMOLE ARROYO.
*S HYD NO. 00106.2 IS ***** AP 03 *****
ADD HYD                 ID=4  HYD=00106.2  I=3  II=2
*S ROUTE COMBINED FLOW FROM SUB-BASIN 00106.2 IN THE AMOLE ARROYO TO
*S 1970 FEET EAST OF THE SNOW VISTA CHANNEL.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0168  FS=0.0168  N=0.03  DIST=58
                        DIST    EL      DIST    EL
                        0       104     4       100
                        54      100     58      104
COMPUTE TRAVEL TIME     ID=12  RN=1  NVS=1  L=1970  S=0.0168
ROUTE                   ID=12  HYD=00106.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=12  CODE=1
*S
*S CALCULATE FLOW FROM SUB-BASIN 00107
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00107  AREA=0.08784 SQ MI
                        A=95   B=0  C=5  D=0
                        TP=0.186  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ROUTE FLOW THROUGH SUB-BASIN 00108 TO THE AMOLE ARROYO.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=103
                        CS=0.0281  FS=0.0281  N=0.03  DIST=36
                        DIST    EL      DIST    EL
                        0       103     3       100
                        33      100     36      103
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=4740  S=0.0281
ROUTE                   ID=11  HYD=00107.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE FLOW FROM SUB-BASIN 00108
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00108  AREA=0.2261 SQ MI
                        A=98   B=0  C=2  D=0
                        TP=0.187  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTE FLOW FROM SUB-BASIN 00107.5 TO THE FLOW
*S FROM SUB-BASIN 00108
ADD HYD                 ID=3  HYD=00108.1  I=11  II=2
*S ADD THE COMBINED FLOW FROM SUB-BASIN 00108.1 TO THE ROUTED FLOW
*S IN THE AMOLE ARROYO.
ADD HYD                 ID=4  HYD=00108.2  I=12  II=3
*S CALCULATE FLOW FROM SUB-BASIN 00109
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00109  AREA=0.0608 SQ MI
                        A=100    B=0  C=0  D=0
                        TP=0.227  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE FLOW FROM SUB-BASIN 00109 TO THE COMBINED FLOW IN THE AMOLE ARROYO.
ADD HYD                 ID=3  HYD=00109.1  I=4  II=2
*S ROUTE FLOW FROM SUB-BASIN 00109.1 IN THE AMOLE ARROYO TO THE SACATE BLANCO CHANNEL.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=104
                        CS=0.0166  FS=0.0166  N=0.03  DIST=58
```

```
                        DIST    EL      DIST    EL
                        0       104     4       100
                        54      100     58      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=3130  S=0.0166
ROUTE                   ID=11  HYD=00109.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S
*S CALCULATE FLOW FROM SUB-BASIN 00110
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=00110  AREA=0.0643 SQ MI
                        A=100  B=0  C=0  D=0
                        TP=0.214 HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE FLOW FROM SUB-BASIN 00110 TO THE ROUTED FLOW IN THE AMOLE ARROYO.
ADD HYD                 ID=3  HYD=00110.1  I=11  II=2
*S RECALL
*S RECALL OUTFLOW HYDROGRAPH FROM SACATE BLANCO CHANNEL.
RECALL HYD          ID=2  HYD=SB100E1B.HYD
                    DT=  .050000 HRS   DA=   1.5283 SQ MI
                    PEAK=    901.008CFS  RO=  .5328 INCHES  NO PTS=188
                    FLOW RATES
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .000       .000       .000
                           .000       .000       .539     13.234     49.413
                        127.140    303.567    578.674    795.514    887.417
                        901.008    850.139    735.799    612.409    507.323
                        423.653    356.904    304.450    263.143    228.853
                        201.247    179.004    160.527    145.101    131.594
                        120.007    109.816    100.700     92.897     86.083
                         80.000     74.316     68.670     63.438     58.768
                         54.276     50.206     46.811     43.930     41.374
                         39.020     36.816     34.742     32.791     30.966
                         29.260     27.658     26.146     24.757     23.458
                         22.185     20.939     19.726     18.564     17.490
                         16.490     15.532     14.618     13.748     12.921
                         12.137     11.395     10.696     10.037      9.417
                          8.832      8.280      7.759      7.269      6.808
                          6.374      5.965      5.581      5.219      4.878
                          4.558      4.256      3.973      3.706      3.456
                          3.220      3.000      2.793      2.599      2.418
                          2.248      2.089      1.941      1.802      1.672
                          1.551      1.438      1.332      1.234      1.143
                          1.058       .979       .906       .838       .774
                           .716       .662       .611       .565       .522
                           .482       .445       .411       .380       .351
                           .324       .299       .273       .250       .231
                           .213       .197       .181       .168       .155
                           .143       .131       .121       .111       .102
                           .094       .086       .079       .073       .067
                           .061       .056       .052       .048       .044
                           .040       .036       .033       .030       .027
                           .025       .023       .021       .020       .018
                           .017       .015       .014       .013       .012
                           .011       .010       .010       .009       .008
                           .008       .007       .007       .004       .001
                           .001       .001       .001
PRINT HYD               ID=2  CODE=1
*S
*S ADD THE OUTFLOW HYDROGRAPH FROM THE SACATE BLANCO CHANNEL TO THE FLOW
*S IN THE AMOLE ARROYO.
*S HYD NO. 00110.2 IS ***** AP 04 *****
ADD HYD                 ID=4  HYD=00110.2  I=3  II=2
PRINT HYD               ID=4  CODE=1
```

```
*S ROUTE COMBINED FLOW FROM SUB-BASIN 00110.2 IN THE AMOLE ARROYO TO
*S THE AMOLE DETENTION FACILITY.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=105.7
                        CS=0.0162  FS=0.0162  N=0.03  DIST=64
                        DIST    EL      DIST    EL
                        0       105.7   17      100
                        47      100     64      105.7
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=700  S=0.0162
ROUTE                   ID=11  HYD=00110.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=11  CODE=1
*S  RECALL THE OUTFLOW HYDROGRAPH FROM THE AMOLE DEL NORTE WATERSHED
RECALL HYD          ID= 30  HYD=AN100E1B.HYD
                    DT=  .050000 HRS   DA=   6.3025 SQ MI
                    PEAK=   1642.960CFS  RO=   .7503 INCHES  NO PTS=600
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .001       .001       .002       .003
                          .005       .007       .010       .013       .017
                          .021       .024       .029       .033       .037
                          .041       .045       .048       .069       .388
                         2.077      8.200     27.807     80.837    201.028
                       424.833    788.064   1252.722   1556.152   1642.960
                      1637.068   1585.328   1500.511   1396.130   1297.427
                      1221.890   1172.918   1147.720   1135.220   1124.608
                      1111.620   1095.134   1075.084   1051.221   1023.885
                       993.968    961.610    927.573    893.103    857.429
                       821.104    787.030    756.054    727.202    699.251
                       671.875    645.455    620.053    596.543    575.872
                       559.338    546.965    537.308    529.548    523.006
                       516.987    510.662    503.382    494.927    485.347
                       474.701    462.508    447.611    429.675    409.532
                       387.732    363.989    339.794    315.633    291.461
                       268.426    246.155    223.384    200.931    181.110
                       164.586    150.589    138.167    127.053    117.388
                       108.655    100.647     93.832     88.272     83.724
                        80.064     77.116     74.607     72.387     70.373
                        68.494     66.683     64.889     63.121     61.438
                        59.902     58.547     57.357     56.301     55.352
                        54.495     53.712     52.988     52.307     51.653
                        51.012     50.384     49.784     49.231     48.729
                        48.268     47.833     47.416     47.015     46.626
                        46.246     45.873     45.507     45.150     44.799
                        44.452     44.110     43.776     43.448     43.126
                        42.810     42.502     42.201     41.908     41.621
                        41.338     41.060     40.789     40.526     40.271
                        40.023     39.781     39.543     39.311     39.087
                        38.869     38.656     38.449     38.249     38.054
                        37.866     37.681     37.499     37.319     37.144
                        36.975     36.810     36.651     36.497     36.348
                        36.202     36.060     35.918     35.779     35.644
                        35.513     35.384     35.255     35.128     35.004
                        34.882     34.761     34.643     34.525     34.407
                        34.287     34.167     34.048     33.931     33.816
                        33.702     33.589     33.474     33.360     33.249
                        33.140     33.032     32.926     32.822     32.721
                        32.622     32.526     32.432     32.339     32.245
                        32.152     32.065     31.980     31.896     31.811
                        31.728     31.647     31.567     31.489     31.409
                        31.330     31.255     31.183     31.111     31.040
                        30.971     30.902     30.834     30.767     30.700
                        30.635     30.571     30.508     30.449     30.392
                        30.335     30.275     30.216     30.159     30.104
                        30.047     29.989     29.931     29.874     29.818
                        29.763     29.709     29.654     29.598     29.542
                        29.489     29.437     29.385     29.332     29.281
                        29.230     29.179     29.127     29.076     29.026
                        28.977     28.927     28.877     28.829     28.780
```

28.733	28.687	28.641	28.594	28.545
28.496	28.448	28.403	28.361	28.321
28.278	28.230	28.181	28.134	28.091
28.050	28.010	27.968	27.925	27.880
27.837	27.794	27.752	27.711	27.670
27.628	27.586	27.544	27.503	27.463
27.423	27.384	27.343	27.302	27.262
27.223	27.184	27.146	27.108	27.069
27.028	26.986	26.947	26.911	26.877
26.841	26.803	26.765	26.727	26.689
26.653	26.615	26.574	26.534	26.496
26.461	26.426	26.388	26.351	26.315
26.281	26.245	26.209	26.174	26.138
26.102	26.065	26.029	25.994	25.959
25.924	25.890	25.856	25.823	25.788
25.753	25.718	25.684	25.648	25.612
25.578	25.546	25.514	25.480	25.449
25.419	25.387	25.352	25.317	25.283
25.248	25.214	25.181	25.148	25.115
25.083	25.051	25.019	24.987	24.954
24.918	24.883	24.850	24.819	24.788
24.755	24.722	24.689	24.655	24.622
24.590	24.558	24.527	24.496	24.465
24.432	24.400	24.367	24.335	24.303
24.272	24.241	24.211	24.181	24.149
24.117	24.085	24.054	24.023	23.992
23.962	23.930	23.898	23.868	23.839
23.808	23.776	23.744	23.716	23.689
23.659	23.628	23.597	23.565	23.534
23.504	23.474	23.444	23.415	23.386
23.357	23.329	23.301	23.273	23.245
23.216	23.185	23.153	23.123	23.096
23.069	23.040	23.010	22.982	22.955
22.926	22.897	22.868	22.839	22.811
22.784	22.756	22.729	22.702	22.675
22.647	22.619	22.590	22.562	22.535
22.508	22.481	22.454	22.428	22.400
22.371	22.343	22.317	22.291	22.265
22.237	22.210	22.183	22.156	22.130
22.103	22.075	22.047	22.021	21.995
21.968	21.939	21.909	21.881	21.856
21.832	21.806	21.778	21.749	21.720
21.691	21.663	21.635	21.607	21.580
21.552	21.525	21.498	21.471	21.444
21.418	21.390	21.347	21.262	21.132
20.976	20.815	20.660	20.512	20.371
20.234	20.102	19.970	19.839	19.710
19.581	19.453	19.327	19.202	19.079
18.958	18.839	18.723	18.608	18.495
18.383	18.274	18.166	18.058	17.951
17.842	17.733	17.622	17.509	17.396
17.280	17.164	17.048	16.931	16.814
16.696	16.579	16.462	16.346	16.230
16.115	16.001	15.888	15.777	15.667
15.558	15.451	15.346	15.242	15.140
15.040	14.943	14.847	14.754	14.664
14.576	14.491	14.407	14.325	14.245
14.167	14.090	14.014	13.941	13.868
13.798	13.728	13.661	13.595	13.530
13.467	13.406	13.347	13.289	13.232
13.178	13.124	13.072	13.022	12.973
12.925	12.878	12.833	12.788	12.745
12.702	12.661	12.620	12.580	12.541
12.503	12.465	12.428	12.391	12.355
12.320	12.285	12.250	12.216	12.183
12.150	12.118	12.086	12.055	12.024
11.994	11.964	11.934	11.905	11.877

```
                        11.849     11.821     11.794     11.767     11.741
PRINT HYD               ID=30  CODE=1
*S ADD THE FLOW FROM THE AMOLE ARROYO TO THE FLOW FROM THE AMOLE DEL NORTE
*S CHANNEL.  THIS IS THE TOTAL FLOW INTO THE AMOLE DETENTION FACILITY.
*S HYD NO. AP40 IS ***** AP 40 *****
ADD HYD                 ID=40  HYD=AP40  I=11  II=30
PRINT HYD               ID=40  CODE=1
*S
*S  IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM
*S                  OTHER PONDS. THEREFORE, VERIFY VOLUME FROM THE OUTFLOW
*S                  HYDROGRAPH.  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*S                  TRUNCATED FROM THE INFLOW HYDROGRAPH.
*S
*S ROUTE THE FLOW IN THE AMOLE DETENTION FACILITY WITH THE ROUTE RESERVOIR
ROUTE RESERVOIR         ID=41  HYD=AMOLE.OUT  INFLOW=40 CODE=1
                        OUTFLOW         STORAGE         ELEV
                        0               0               70
                        0.01            8               72
                        0.02            30              74
                        0.03            60              76
                        0.04            90              78
                        0.05            130             80
                        0.06            168             82
                        0.07            204             84
                        0.08            248             86
                        0.09            290             88
                        0.10            330             90
                        0.11            378             92
                        0.12            422             94
                        0.13            490             96.75
                        330             500             97
                        2595            520             98
                        5385            550             99
                        10159           582             100.37
*S HYD NO. AMOLE.OUT IS ***** AP 41 *****
*S  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 40.1 = 0 CFS
PRINT HYD               ID=41  CODE=1
*S  ROUTE THE OUTFLOW DOWN THE AMOLE/HUBBLE DIVERSION CHANNEL TO 300 FEET
*S  NORTH OF THE PROPOSED RIO BRAVO CROSSING
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=116
                        CS=0.03  FS=0.03  N=0.025  DIST=158
                        DIST    EL      DIST    EL
                        0       116     64      100
                        94      100     158     116
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2000  S=0.03
ROUTE                   ID=11  HYD=AP40.5  INFLOW ID=41  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 40001
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BK=1.15
COMPUTE NM HYD          ID=2  HYD=E40001  AREA=0.0717  SQ MI
                        A=84  B=0  C=13  D=3
                        TP=0.183  HR  MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S  ADD THE ROUTED FLOW FROM SUB-BASIN AP40.5 TO THE FLOW FROM SUB-BASIN 40001.
ADD HYD                 ID=3  HYD=E40001.1  I=11  II=2
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE NORTH PORTION OF RIO BRAVO
RECALL HYD          ID= 5  HYD=RB100E1B.HYD
                    DT=  .050000 HRS   DA=     .5978 SQ MI
                    PEAK=    400.381CFS  RO=  .6616 INCHES  NO PTS=513
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .106      1.328
                         5.685     14.316     28.263     61.205    137.672
```

251.084	347.340	395.293	400.381	378.990
343.306	302.531	261.378	223.528	190.662
163.040	139.386	117.642	98.216	82.370
70.196	60.681	52.959	46.496	41.181
37.440	34.703	32.327	30.154	28.134
26.290	24.595	23.005	21.515	20.118
18.812	17.594	16.455	15.395	14.413
13.501	12.647	11.853	11.116	10.430
9.791	9.194	8.638	8.126	7.650
7.201	6.782	6.390	6.026	5.690
5.377	5.079	4.804	4.551	4.310
4.087	3.878	3.682	3.501	3.332
3.177	3.030	2.891	2.763	2.647
2.537	2.432	2.335	2.244	2.161
2.086	2.015	1.944	1.881	1.825
1.771	1.722	1.679	1.636	1.598
1.565	1.532	1.502	1.472	1.446
1.424	1.402	1.382	1.367	1.356
1.346	1.334	1.337	1.351	1.365
1.371	1.369	1.367	1.364	1.356
1.347	1.337	1.329	1.320	1.307
1.295	1.287	1.277	1.267	1.257
1.248	1.239	1.232	1.224	1.212
1.201	1.191	1.183	1.176	1.170
1.164	1.154	1.145	1.141	1.135
1.128	1.121	1.117	1.112	1.108
1.104	1.096	1.088	1.081	1.076
1.072	1.068	1.065	1.062	1.059
1.056	1.049	1.043	1.042	1.037
1.033	1.028	1.021	1.018	1.016
1.011	1.010	1.009	1.004	.999
.994	.991	.988	.986	.984
.982	.976	.970	.969	.966
.962	.958	.953	.948	.947
.946	.945	.943	.938	.932
.933	.934	.931	.926	.923
.920	.918	.916	.910	.904
.904	.905	.901	.898	.898
.896	.893	.890	.888	.886
.885	.883	.878	.877	.877
.873	.869	.870	.871	.868
.864	.861	.859	.857	.855
.854	.853	.847	.842	.842
.843	.840	.836	.837	.834
.832	.829	.827	.825	.824
.822	.817	.817	.816	.813
.813	.814	.810	.805	.802
.799	.798	.801	.805	.802
.794	.787	.786	.787	.788
.788	.788	.782	.778	.778
.775	.773	.774	.772	.770
.767	.766	.764	.763	.762
.762	.760	.755	.755	.755
.751	.752	.752	.749	.744
.741	.739	.742	.745	.743
.739	.737	.735	.734	.733
.731	.725	.720	.721	.723
.723	.719	.715	.716	.719
.715	.713	.714	.711	.709
.706	.705	.703	.702	.701
.701	.700	.700	.698	.694
.693	.693	.690	.685	.687
.688	.686	.682	.684	.686
.684	.680	.677	.675	.674
.673	.672	.671	.670	.670
.669	.669	.668	.668	.662
.658	.658	.661	.662	.658

```
                    .654       .655       .652       .650       .652
                    .650       .648       .650       .648       .646
                    .644       .643       .641       .641       .640
                    .640       .639       .639       .637       .633
                    .632       .633       .629       .630       .631
                    .627       .623       .625       .627       .624
                    .620       .618       .621       .624       .622
                    .618       .616       .614       .612       .611
                    .610       .610       .609       .609       .608
                    .608       .608       .607       .607       .606
                    .601       .597       .597       .600       .601
                    .597       .593       .594       .597       .593
                    .591       .592       .590       .588       .590
                    .588       .587       .589       .587       .585
                    .583       .582       .580       .580       .579
                    .579       .578       .578       .577       .572
                    .572       .573       .574       .573       .570
                    .570       .570       .567       .568       .569
                    .565       .562       .564       .566       .563
                    .559       .556       .555       .558       .562
                    .560       .557       .554       .552       .551
                    .550       .549       .549       .548       .548
                    .547       .547       .547       .547       .546
                    .546       .540       .487       .396       .312
                    .249       .203       .167       .139       .115
                    .095       .079       .065       .053       .044
                    .036       .030       .024       .020       .016
                    .013       .011       .009       .007       .005
                    .004       .003       .003       .002       .002
                    .002       .001       .001
PRINT HYD           ID=5  CODE=1
*S ADD THE FLOW FROM THE RECALLED HYDROGRAPH TO THE FLOW FROM SUB-BASIN 40001.1
*S HYD NO. RB1.1 IS ***** AP 42 *****
ADD HYD             ID=4  HYD=RB1.1  I=3  II=5
*S ROUTE THE COMBINED FLOW INTO HUBBLE LAKE
COMPUTE RATING CURVE    CID=1  VN=1  NS=1 MIN EL=100   MAX EL=114
                        CS=0.0289  FS=0.0289  N=0.014  DIST=76
                        DIST    EL      DIST    EL
                        0       114     28      100
                        48      100     76      114
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=1200  S=0.0289
ROUTE                   ID=11  HYD=AP40.5  INFLOW ID=4  DT=0.0
PRINT HYD               ID=11  CODE=1
*S RECALL THE OUTFLOW HYDROGRAPH FROM THE SOUTH PORTION OF RIO BRAVO.
RECALL HYD          ID= 5  HYD=RB100E2B.HYD
                    DT=  .050000 HRS   DA=    .8464 SQ MI
                    PEAK=    356.768CFS  RO=  .5053 INCHES  NO PTS=256
                    FLOW RATES
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .000       .000       .000
                          .000       .000       .338      8.725     39.637
                        95.591    167.942    245.492    307.174    343.968
                       356.768    351.186    333.400    308.677    279.741
                       249.449    221.029    194.789    170.492    149.484
                       132.115    117.418    104.590     93.067     82.820
                        73.904     66.125     59.298     53.293     48.043
                        43.449     39.964     37.566     35.645     33.893
                        32.242     30.673     29.181     27.762     26.421
                        25.164     23.977     22.840     21.753     20.713
                        19.720     18.772     17.867     17.004     16.181
                        15.397     14.651     13.940     13.263     12.619
                        12.006     11.422     10.868     10.340      9.839
                         9.362      8.909      8.478      8.068      7.679
                         7.309      6.957      6.623      6.306      6.004
```

```
                    5.717       5.444       5.185       4.938       4.704
                    4.481       4.270       4.068       3.877       3.695
                    3.521       3.357       3.200       3.051       2.909
                    2.774       2.646       2.523       2.407       2.296
                    2.191       2.090       1.995       1.903       1.817
                    1.734       1.655       1.580       1.509       1.440
                    1.376       1.314       1.254       1.198       1.145
                    1.093       1.045        .998        .954        .911
                     .871        .832        .796        .760        .727
                     .695        .664        .635        .607        .581
                     .556        .531        .508        .486        .465
                     .445        .425        .407        .389        .372
                     .356        .341        .326        .312        .298
                     .285        .273        .261        .250        .239
                     .228        .219        .209        .200        .192
                     .183        .175        .168        .161        .154
                     .147        .141        .135        .129        .124
                     .119        .114        .109        .104        .100
                     .095        .091        .088        .084        .079
                     .076        .073        .070        .067        .064
                     .061        .059        .056        .054        .052
                     .050        .048        .046        .044        .042
                     .040        .038        .037        .035        .034
                     .032        .031        .030        .029        .027
                     .026        .025        .024        .023        .022
                     .021        .020        .019        .019        .018
                     .017        .016        .016        .015        .014
                     .014        .013        .013        .012        .012
                     .011        .011        .010        .010        .009
                     .009        .009        .008        .008        .008
                     .007        .007        .007        .006        .006
                     .006        .006        .005        .005        .005
                     .002
PRINT HYD           ID=5  CODE=1
*S ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.
ADD HYD             ID=3  RB2.1  I=11  II=5
PRINT HYD           ID=3  CODE=1
*S RECALL THE HYDROGRAPH FROM THE BORREGA WATERSHED.
RECALL HYD        ID= 5  HYD=BR100E1B.HYD
                  DT=  .050000 HRS   DA=   1.3879 SQ MI
                  PEAK=    612.057CFS  RO=  .5547 INCHES  NO PTS=531
                  FLOW RATES
                         .000        .000        .000        .000        .000
                         .000        .000        .000        .000        .000
                         .000        .000        .000        .000        .000
                         .000        .000        .000        .000        .000
                         .000        .000        .000        .000        .000
                         .002        .008        .545       6.781      22.826
                       51.674     112.112     227.729     367.817     492.099
                      574.968     612.057     611.667     585.922     545.520
                      498.560     450.614     404.372     360.999     321.672
                      286.669     255.222     227.634     204.058     183.864
                      166.797     152.426     139.711     128.062     117.785
                      108.879     100.962      93.303      86.037      79.721
                       74.296      69.532      65.060      60.867      56.857
                       53.106      49.853      46.993      44.427      42.045
                       39.715      37.493      35.476      33.617      31.856
                       30.074      28.232      26.516      25.014      23.665
                       22.438      21.309      20.140      18.955      17.894
                       16.951      16.101      15.326      14.610      13.944
                       13.319      12.731      12.177      11.654      11.162
                       10.717      10.308       9.907       9.515       9.132
                        8.758       8.395       8.041       7.699       7.367
                        7.046       6.736       6.441       6.166       5.906
                        5.653       5.407       5.169       4.938       4.715
                        4.499       4.291       4.090       3.897       3.712
                        3.534       3.363       3.199       3.042       2.891
```

2.747	2.610	2.479	2.354	2.234
2.120	2.012	1.908	1.810	1.716
1.627	1.542	1.462	1.385	1.312
1.243	1.177	1.115	1.056	1.000
.947	.897	.849	.804	.761
.720	.682	.645	.611	.578
.548	.518	.491	.465	.440
.417	.395	.374	.355	.336
.319	.302	.287	.272	.258
.245	.233	.221	.210	.200
.190	.181	.172	.164	.156
.148	.140	.133	.126	.118
.110	.105	.100	.095	.091
.087	.083	.079	.076	.073
.070	.067	.065	.062	.060
.058	.056	.055	.053	.051
.050	.049	.047	.046	.045
.044	.043	.042	.041	.040
.040	.039	.038	.038	.037
.037	.036	.036	.035	.035
.034	.034	.034	.033	.033
.033	.032	.032	.032	.032
.031	.031	.031	.031	.030
.030	.030	.030	.030	.030
.029	.029	.029	.029	.029
.029	.029	.029	.028	.028
.028	.028	.028	.028	.028
.028	.028	.028	.027	.027
.027	.027	.027	.027	.027
.027	.027	.027	.027	.027
.027	.026	.026	.026	.026
.026	.026	.026	.026	.026
.026	.026	.026	.026	.026
.026	.025	.025	.025	.025
.025	.025	.025	.025	.025
.025	.025	.025	.025	.025
.025	.025	.025	.025	.025
.024	.024	.024	.024	.024
.024	.024	.024	.024	.024
.024	.024	.024	.024	.024
.024	.024	.024	.024	.023
.023	.023	.023	.023	.023
.023	.023	.023	.023	.023
.023	.023	.023	.023	.023
.023	.023	.023	.023	.023
.023	.022	.022	.022	.022
.022	.022	.022	.022	.022
.022	.022	.022	.022	.022
.022	.022	.022	.022	.022
.022	.022	.022	.022	.022
.021	.021	.021	.021	.021
.021	.021	.021	.021	.021
.021	.021	.021	.021	.021
.021	.021	.021	.021	.021
.021	.021	.021	.021	.021
.020	.020	.020	.020	.020
.020	.020	.020	.020	.020
.020	.020	.020	.020	.020
.020	.020	.020	.020	.020
.020	.020	.020	.020	.020
.020	.020	.019	.019	.019
.019	.019	.019	.019	.019
.019	.019	.019	.019	.019
.019	.019	.019	.019	.019
.019	.019	.019	.019	.019

```
                        .019        .019        .019        .019        .019
                        .018        .018        .018        .018        .018
                        .018        .018        .018        .018        .018
                        .018        .018        .018        .018        .018
                        .018        .018        .018        .018        .018
                        .017        .017        .016        .016        .015
                        .014        .013        .013        .012        .011
                        .011        .010        .009        .009        .008
                        .008        .007        .007        .006        .006
                        .006        .005        .005        .005        .004
                        .004        .004        .004        .003        .003
                        .003        .003        .003        .002        .002
                        .002        .002        .002        .002        .002
                        .001        .001        .001        .001        .001
                        .001
*S ADD THE FLOW FROM THE RECALL HYDROGRAPH TO THE TOTAL FLOW IN HUBBLE LAKE.
*S HYD NO. RB2.1 IS ***** AP 50 *****
ADD HYD                 ID=4  RB2.1  I=3  II=5
PRINT HYD               ID=4  CODE=1
*S ROUTE THE TOTAL FLOW INTO HUBBLE LAKE WITH THE ROUTE RESERVOIR.
*S
*S  IMPORTANT NOTE: RESERVOIR ROUTE DOES NOT INCLUDE ALL OF THE VOLUME FROM
*S                  OTHER PONDS. THEREFORE, VERIFY VOLUME FROM THE OUTFLOW
*S                  HYDROGRAPH.  THIS WILL ACCOUNT FOR THE VOLUME OF RUNOFF
*S                  TRUNCATED FROM THE INFLOW HYDROGRAPH.
*S
ROUTE RESERVOIR         ID=99  HYD=HUBBLE.LAKE  INFLOW=4 CODE=1
                        OUTFLOW         STORAGE         ELEV
                        0               0               17.2
                        0.01            46              20
                        0.02            120             22
                        0.03            193             24
                        0.04            260             26
                        0.05            330             28
                        0.06            408             30
                        0.07            493             32
                        3850            528             33
                        9300            570             34
                        16750           610             35
                        19854           650             35.5
*S  NOTE: PRINCIPLE SPILLWAY IS MODELED AS CLOSED, THEREFORE AP 50.1 = 0 CFS
*S HYD NO. 99 IS ***** AP 50.2 *****
PRINT HYD               ID=99  CODE=1
FINISH
```

SECATE BLANCO WATERSHED
AHYMO INPUT FILE
EXISTING CONDITIONS

```
START                0.0 HOURS    PC=0   PL=-1
*S
*S       SACATE BLANCO WATERSHED
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S FILE NAME: SB100E1BM.DAT  (EXISTING CONDITIONS)
*S BY:URSGWC
*S LAST REVISION: 2-27-2000

*S* MODEL REFLECTS RPSDP-DPM UTIMATE DEVELOPMENT WITH EXISTING CONDITIONS
*S  TO THE WEST


*S**************************************************************************
*S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE SACATE BLANCO
*S WATERSHED.  FLOWS FROM THIS BASIN IS CONVEYED TO THE AMOLE DETENTION FACILITY
*S VIA THE AMOLE ARROYO.  BASIN BOUNDARIES WERE DETERMINED FROM NOVEMBER 1995
*S AREIAL, TOPOGRAPHICAL MAPS AND PREVIOUS STUDIES.
*S
*S NOTE: AN "E" (EXISTING) HAS BEEN PLACED IN FRONT OF EACH SUB-BASIN HYDROGRAPH
*S       DESIGNATION DUE TO THE LIMITATIONS OF AHYMO
*S
*S**************************************************************************
*S ANALYSIS ASSUMPTIONS:
*S**************************************************************************
*S 1. ALL LAND IN THIS BASIN IS MODELED AS EXISTING CONDITION.
*S
*S 2. THE PUNCH HYD COMMAND WAS ADDED TO THE END OF THIS FILE SO THE OUTFALL
*S    HYDROGRAPH COULD BE USED IN THE AMOLE ARROYO EXISTING CONDITIONS MODEL
*S    AA100E1B.DAT, WHICH WILL BE USED IN THE ANALYSIS OF THE AMOLE/HUBBLE
*S    LAKE DETENTION SYSTEM.
*S
*S 3. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
*S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
*S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
*S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
*S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDENTIAL
*S    DEVELOPMENTS.
*S
**************************************************************************
**************************************************************************
*S100 YEAR 24HR STORM EXISTING CONDITION
RAINFALL             TYPE=2  0.0  1.87  2.20  2.66    DT=0.05
** 10 YEAR 24HR STORM EXISTING CONDITION
**RAINFALL            TYPE=2  0.0  1.25  1.47  1.77    DT=0.05
**  2 YEAR 24HR STORM EXISTING CONDITION
**RAINFALL            TYPE=2  0.0  0.74  0.95  1.15    DT=0.05
**************************************************************************
*S CALCULATE THE FLOW FROM SUB-BASIN 60101.
*S BASIN 60101 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK          CODE=1  BF=1.15
COMPUTE NM HYD         ID=2  HYD=E60101  AREA=0.0482 SQ MI
                       A=100  B=0  C=0  D=0
                       TP=0.188   MASSRAIN=-1
PRINT HYD              ID=2  CODE=1
*S ROUTE FLOW FROM SUB-BASIN 60101 THROUGH SUB-BASIN 60102.
COMPUTE RATING CURVE   CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                       CS=0.0211  FS=0.0211  N=0.03  DIST=12
                       DIST    EL      DIST    EL
                       0       104     4       100
                       8       100     12      104
COMPUTE TRAVEL TIME    ID=11  RN=1  NVS=1  L=950  S=0.0211
ROUTE                  ID=11  HYD=E60101.5  INFLOW ID=2  DT=0.0
PRINT HYD              ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60102.
*S BASIN 60102 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
```

```
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60102  AREA=0.1019 SQ MI
                        A=100  B=0  C=0  D=0
                        TP=0.223   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60101.5 TO THE FLOW FROM SUB-BASIN 60102.
ADD HYD                 ID=3  HYD=E60102.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
*S ROUTE COMBINED FLOW FROM SUB-BASIN 60102.1 THROUGH SUB-BASIN 60103.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.014  FS=0.014  N=0.03  DIST=64
                        DIST    EL      DIST    EL
                        0       101     2       100
                        62      100     64      101
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=710  S=0.014
ROUTE                   ID=11  HYD=E60102.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60103.
*S BASIN 60103 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60103  AREA=0.0392 SQ MI
                        A=100  B=0  C=0  D=0
                        TP=0.199   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60102.5 TO THE FLOW FROM SUB-BASIN 60103.
ADD HYD                 ID=9  HYD=E60103.1  I=11  II=2
PRINT HYD               ID=9  CODE=1
*S
*S CALCULATE THE FLOW FROM SUB-BASIN 60104.
*S BASIN 60104 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60104  AREA=0.156 SQ MI
                        A=50  B=28  C=22  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ROUTE FLOW FROM SUB-BASIN 60104 THROUGH SUB-BASIN 60105.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=102  MAX EL=105
                        CS=0.036  FS=0.036  N=0.03  DIST=190
                        DIST    EL      DIST    EL
                        80      105     130     102
                        190     105
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=3300  S=0.036
ROUTE                   ID=11  HYD=E60104.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60105.
*S BASIN 60105 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60105  AREA=0.090 SQ MI
                        A=100 B=0  C=0  D=0
                        TP=0.182   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60104.5 TO THE FLOW FROM SUB-BASIN 60105.
ADD HYD                 ID=3  HYD=E60105.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60106.
*S BASIN 60106 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60106  AREA=0.0795 SQ MI
                        A=95 B=0  C=5  D=0
                        TP=0.137   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ROUTE FLOW FROM SUB-BASIN 60106 THROUGH SUB-BASIN 60105.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=101
                        CS=0.041  FS=0.041  N=0.03  DIST=102
                        DIST    EL      DIST    EL
                        0       101     1       100
                        101     100     102     101
```

```
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=2600  S=0.041
ROUTE                    ID=11  HYD=E60106.5  INFLOW ID=2  DT=0.0
PRINT HYD                ID=11  CODE=1

*  ADD TO FLOW FROM 60105
ADD HYD                 ID=11  HYD=60106.6       I=11  II=3
PRINT HYD               ID=11  CODE=1

*S
*************************************************************************
*S OFFSITE FLOW AT EDGE OF RBSDP AREA                                   **
*************************************************************************
*S


*S CALCULATE THE FLOW FROM SUB-BASIN 60107A.
*S BASIN 60107 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK            CODE=1  BF=1.15
COMPUTE NM HYD           ID=2  HYD=E60107A  AREA=0.043 SQ MI
                         A=100 B=0  C=0  D=0
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
*S ROUTE FLOW FROM SUB-BASIN 60107A THROUGH SUB-BASIN 60107B.
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=101
                         CS=0.041  FS=0.041  N=0.03  DIST=102
                         DIST    EL      DIST    EL
                         0       101     1       100
                         101     100     102     101
COMPUTE TRAVEL TIME      ID=12  RN=1  NVS=1  L=2560  S=0.033
ROUTE                    ID=12  HYD=E60107A.5  INFLOW ID=2  DT=0.0
PRINT HYD                ID=12  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60107B.
*S BASIN 60107B IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK            CODE=1  BF=1.15
COMPUTE NM HYD           ID=6  HYD=E60107B  AREA=0.058648 SQ MI
                         A=100 B=0  C=0  D=0
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=6  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60107A.5 TO THE FLOW FROM SUB-BASIN 60107B.
ADD HYD                  ID=7  HYD=E60107B.1  I=12  II=6
PRINT HYD                ID=7  CODE=1

*S
*************************************************************************
*S OFFSITE FLOW AT EDGE OF RBSDP AREA                                   **
*************************************************************************
*S




*
*S CALCULATE THE FLOW FROM SUB-BASIN 60108.
*S BASIN 60108 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK            CODE=1  BF=1.15
COMPUTE NM HYD           ID=2  HYD=E60108  AREA=0.0924 SQ MI
                         A=48 B=52  C=0  D=0
                         TP=0.133   MASSRAIN=-1
PRINT HYD                ID=2  CODE=1
*S ROUTE FLOW FROM SUB-BASIN 60108 THROUGH SUB-BASIN 60109.
COMPUTE RATING CURVE     CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                         CS=0.041  FS=0.041  N=0.03  DIST=28
                         DIST    EL      DIST    EL
                         0       104     4       100
                         24      100     28      104
COMPUTE TRAVEL TIME      ID=11  RN=1  NVS=1  L=2790  S=0.041
ROUTE                    ID=11  HYD=E60108.5  INFLOW ID=2  DT=0.0
```

```
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60109.
*S BASIN 60109 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60109  AREA=0.1023 SQ MI
                        A=86 B=14  C=0  D=0
                        TP=0.137   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60108.5 TO THE FLOW FROM SUB-BASIN 60109.
ADD HYD                 ID=19  HYD=E60109.1  I=11  II=2
PRINT HYD               ID=19  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60110.
*S BASIN 60110 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60110  AREA=0.1046 SQ MI
                        A=59 B=41  C=0  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ROUTE FLOW FROM SUB-BASIN 60110 THROUGH SUB-BASIN 60111.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.043  FS=0.043  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2915  S=0.043
ROUTE                   ID=11  HYD=E60110.5  INFLOW ID=2  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60111.
*S BASIN 60111 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60111  AREA=0.0558 SQ MI
                        A=100 B=0  C=0  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60110.5 TO THE FLOW FROM SUB-BASIN 60111.
ADD HYD                 ID=3  HYD=E60111.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60111.1 THROUGH SUB-BASIN 60109.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.034  FS=0.034  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=590  S=0.034
ROUTE                   ID=11  HYD=E60111.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60111.5 TO THE COMBINED FLOW
*S FROM SUB-BASIN 60109.1.
ADD HYD                 ID=3  HYD=E60111.2  I=19  II=11
PRINT HYD               ID=3  CODE=1
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60111.2 THROUGH SUB-BASIN 60112.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.028  FS=0.028  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=3380  S=0.028
ROUTE                   ID=11  HYD=E60111.6  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60112.
*S BASIN 60112 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60112  AREA=0.0432 SQ MI
                        A=100 B=0  C=0  D=0
                        TP=0.187   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60111.6 TO THE FLOW FROM SUB-BASIN 60112.
```

```
ADD HYD                 ID=3  HYD=E60112.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
*


*************************************************************************
* USE ROUTE RESERVOIR TO MODEL A POND TO RESTRICT UNDEVELOPED FLOWS TO   *
*  MATCH DEVELOPED CONDITION FLOWS.                                      *
*************************************************************************

ROUTE RESERVOIR         ID=4  HYD=TEMPPOND1  INFLOW ID=3 CODE=5
                        OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                          0                0              100
                          20               .5             101
                          30               1              102
                          62               1.5            103
                          104              2              104
                          149              2.5            105
                          195              3              106
                          240              3.5            107
                          250              4              108
PRINT HYD               ID=3  CODE=5

*S
*************************************************************************
*S OFFSITE FLOW AT EDGE OF RBSDP AREA                                   **
*************************************************************************
*S




*S CALCULATE THE FLOW FROM SUB-BASIN 60113.
*S BASIN 60113 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60113  AREA=0.0580 SQ MI
                        A=96 B=4  C=0  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60114.
*S BASIN 60114 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=3  HYD=E60114  AREA=0.2162 SQ MI
                        A=73 B=27  C=0  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=3  CODE=1
*S ADD THE FLOW FROM SUB-BASIN 60113 TO THE FLOW FROM SUB-BASIN 60114.
ADD HYD                 ID=4  HYD=E60114.1  I=2  II=3
PRINT HYD               ID=4  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60115.
*S BASIN 60115 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60115  AREA=0.0764 SQ MI
                        A=86 B=14  C=0  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE COMBINED FLOW FROM SUB-BASIN 60114.1 TO THE FLOW FROM SUB-BASIN 60115.
ADD HYD                 ID=3  HYD=E60115.1  I=2  II=4
PRINT HYD               ID=3  CODE=1
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60115.1 THROUGH SUB-BASIN 60116
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.039  FS=0.039  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
```

```
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=2120  S=0.039
ROUTE                   ID=11  HYD=E60115.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60116.
*S BASIN 60116 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60116  AREA=0.1381 SQ MI
                        A=100 B=0  C=0  D=0
                        TP=0.133   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60115.5 TO THE FLOW FROM SUB-BASIN 60116.
ADD HYD                 ID=3  HYD=E60116.1  I=11  II=2
PRINT HYD               ID=3  CODE=1
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 60116.1 THROUGH SUB-BASIN 60117,
*S TO THE HEAD OF THE SACATE BLANCO DIVERSION CHANNEL.
COMPUTE RATING CURVE    CID=1  VN=1  NS=1  MIN EL=100  MAX EL=104
                        CS=0.028  FS=0.028  N=0.03  DIST=18
                        DIST    EL      DIST    EL
                        0       104     4       100
                        14      100     18      104
COMPUTE TRAVEL TIME     ID=11  RN=1  NVS=1  L=4110  S=0.028
ROUTE                   ID=11  HYD=E60116.5  INFLOW ID=3  DT=0.0
PRINT HYD               ID=11  CODE=1
*S CALCULATE THE FLOW FROM SUB-BASIN 60117.
*S BASIN 60117 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK           CODE=1  BF=1.15
COMPUTE NM HYD          ID=2  HYD=E60117  AREA=0.03236 SQ MI
                        A=100 B=0  C=0  D=0
                        TP=0.197   MASSRAIN=-1
PRINT HYD               ID=2  CODE=1
*S ADD THE ROUTED FLOW FROM SUB-BASIN 60116.5 TO THE FLOW FROM SUB-BASIN 60117
*
ADD HYD                 ID=3  HYD=E60117.1  I=11  II=2
PRINT HYD               ID=3  CODE=1


**************************************************************************
* USE ROUTE RESERVOIR TO MODEL A POND TO RESTRICT UNDEVELOPED FLOWS TO   *
*  250 CFS.                                      *
**************************************************************************

ROUTE RESERVOIR         ID=4  HYD=TEMPPOND2  INFLOW ID=3 CODE=5
                        OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                          0                0              100
                          20               .5             101
                          30               1              102
                          62               1.5            103
                          104              2              104
                          149              2.5            105
                          195              3.5            106
                          240              4.0            107
                          250              6              108
PRINT HYD               ID=3  CODE=5

*S
**************************************************************************
*S OFFSITE FLOW AT EDGE OF RBSDP AREA                                    **
**************************************************************************
*S
```

FINISH

RIO BRAVO WATERSHED
AHYMO INPUT FILE
EXISTING CONDITIONS

```
START                0.0 HOURS    PC=0  PL=-1
*S
*S      RIO BRAVO WATERSHED
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S FILE NAME: RB100D1B.DAT  (EXISTING CONDITIONS)
*S BY: RICHARD STOCKTON  PEER REVIEW: D. DIXON
*S LAST REVISION: 05-14-96
*******************************************************************************
*S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE RIO BRAVO
*S BASIN.  FLOWS FROM THIS BASIN IS CONVEYED TO HUBBLE LAKE DETENTION FACILITY
*S VIA THE HUBBLE LAKE/AMOLE DIVERSION CHANNEL.
*S THE RIO BRAVO MODEL WAS DEVELOPED BY AVID (AND ACCEPTED BY THE COUNTY).
*S
*******************************************************************************
*S ANALYSIS ASSUMPTIONS:
*******************************************************************************
*S 1. ALL LAND IN THIS BASIN IS MODELED AS DEVELOPED CONDITION AT 3 DU/AC.
*S
*S 2. THE PUNCH HYD COMMAND WAS ADDED TO THE END OF THIS FILE SO THE OUTFALL
*S    HYDROGRAPH COULD BE USED IN THE AMOLE DEL NORTE EXISTING CONDITIONS MODEL
*S    AA100E1B.DAT, WHICH WILL BE USED IN THE ANALYSIS OF THE AMOLE ARROYO SYSTEM.
*S
*S 3. A BULKING FACTOR OF 15% HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN AND
*S    A BULKING FACTOR OF 6% HAS BEEN ADDED TO EACH DEVELOPED SUB-BASIN LIKELY
*S    TO PRODUCE SEDIMENT.  A BULKING FACTOR OF 3% HAS BEEN ADDED TO EACH
*S    DEVELOPED SUB-BASIN THAT WOULD PROBIBLY PRODUCE SEDIMENT, SUCH AS PARKS
*S    AND SCHOOL PLAY GROUNDS.   AND, NO BULKING FACTOR FOR WELL DEFINED RESIDENTIAL
*S    DEVELOPMENTS.
*S
*******************************************************************************
*S100 YEAR 24HR STORM EXISTING CONDITION
RAINFALL             TYPE=2  0.0  1.87  2.20  2.66    DT=0.05
** 10 YEAR 24HR STORM EXISTING CONDITION
**RAINFALL            TYPE=2  0.0  1.25  1.47  1.77    DT=0.05
**  2 YEAR 24HR STORM EXISTING CONDITION
**RAINFALL            TYPE=2  0.0  0.74  0.95  1.15    DT=0.05
*******************************************************************************
**LH* *S RIO BRAVO
**LH* *S COMPUTATIONS FOR 6 HR STORM (TYPE 1)
**LH* *S EXISTING CONDITIONS, SURROUNDING LAND UNDEVELOPED -- ROAD IN PLACE
**LH* *S BASINS B-1 THROUGH B-6
*S
*S
*S
**LH* START                  TIME=0.0 HR  PUNCH CODE=0
**LH* RAINFALL               TYPE=1 (SIX HR STORM)  RAIN QUARTER=0.0 IN
**LH*                        RAIN ONE=1.93 IN RAIN SIX=2.25 IN
**LH*                        RAIN DAY=0.0 IN  DT=0.0333333 HRS
*S
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK          CODE=1   BK=1.15
*S COMPUTE HYDROGRAPH FOR B-1
COMPUTE NM HYD          ID=1  HYD NO=201.0  DA=0.02371 SQ MI
                       %A=100.0  %B=0.0  %C=0.0  %D=0.0
                       TP=0.1333 HR
                       MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*S
*S
*S
*S GENERATION OF SEDIMENT NOT LIKELY, NO BULKING FACTOR ADDED.
*S COMPUTE HYDROGRAPH FOR ROADWAY STA. 124+00 TO STA. 150+00
*S PAVEMENT WIDTH=76'
```

```
*S DO NOT ROUTE, SINCE ROADSIDE DITCHES CONVEY ROADWAY FLOW TO NEW CHANNEL
COMPUTE NM HYD          ID=7  HYD NO=201.2  DA=0.007088 SQ MI
                       %A=0.0  %B=0.0  %C=0.0  %D=100.0
                       TP=0.1333 HR
                       MASS RAINFALL=-1
PRINT HYD               ID=7 CODE=1
*S TOTAL RUNOFF FROM ROADWAY AND B-1
ADD HYD                 NEW ID=8  NEW HYD=201.3  ADD ID=1 TO ID=7
PRINT HYD               ID=8 CODE=1
*S
*S
*S
*S ROUTE B-1 THROUGH EXISTING ARROYO IN B-3
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                       MIN ELEV=100.0 FT  MAX ELEV=103.0 FT
                       CH SLP=.045  FP SLOPE=.045
                       N=-.030  DIST=60.0
                       DIST    ELEV    DIST    ELEV    DIST    ELEV
                       0       103.0   15.0    100.0   45.0    100.0
                       60.0    103.0
COMPUTE TRAVEL TIME     ID=2  REACH NO=1  NO VS=1  L=5600 FT
                       SLP=.045
ROUTE                   OUTFLOW ID=2  OUTFLOW HYD NO=201.4
                       INFLOW ID=1  DT=0.0
PRINT HYD               ID=2 CODE=1
*S
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1   BK=1.15
*S COMPUTE HYDROGRAPH FOR B-3
COMPUTE NM HYD          ID=3  HYD NO=202.0  DA=0.2047 SQ MI
                       %A=100.0  %B=0.0  %C=0.0  %D=0.0
                       TP=0.18 HR
                       MASS RAINFALL=-1
PRINT HYD               ID=3 CODE=1
*S
*S
*S
*S GENERATION OF SEDIMENT NOT LIKELY, NO BULKING FACTOR ADDED.
*S COMPUTE HYDROGRAPH FOR ROADWAY STA. 150+00 TO STA. 206+00
*S PAVEMENT WIDTH=76'
COMPUTE NM HYD          ID=1  HYD NO=202.2  DA=.01526 SQ MI
                       %A=0.0  %B=0.0  %C=0.0  %D=100.0
                       TP=0.1333 HR
                       MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*S TOTAL RUNOFF FROM ROADWAY AND B-3
ADD HYD                 NEW ID=1  NEW HYD=202.3  ADD ID=1 TO ID=3
PRINT HYD               ID=1 CODE=1
*S
*S
*S
*S ADD ROADWAY FLOW FROM STA. 124+00 TO STA. 150+00
ADD HYD                 NEW ID=1  NEW HYD=202.4  ADD ID=1 TO ID=7
*S TOTAL FLOW ENTERING NEW CHANNEL AT STA. 206+00
ADD HYD                 NEW ID=1  NEW HYD=202.5  ADD ID=1 TO ID=2
PRINT HYD               ID=1 CODE=1
*S
*S
*S
*S ROUTE TOTAL FLOW THROUGH B-5 IN NEW CHANNEL
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                       MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                       CH SLP=.025  FP SLOPE=.025
                       N=-.013  DIST=25.5
                       DIST    ELEV    DIST    ELEV    DIST    ELEV
```

```
                      0       106.0   12.0    100.0   17.0    100.0
                      29.0    106.0
COMPUTE TRAVEL TIME     ID=3  REACH NO=2  NO VS=1  L=6000 FT
                      SLP=.025
ROUTE                   OUTFLOW ID=3  OUTFLOW HYD=202.4
                      INFLOW ID=1  DT=0.0
PRINT HYD               ID=3 CODE=1
*S
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1   BK=1.15
*S COMPUTE HYDROGRAPH FOR B-5
COMPUTE NM HYD          ID=1  HYD NO=203.0  DA=0.3285 SQ MI
                      %A=100.0  %B=0.0  %C=0.0  %D=0.0
                      TP=0.30 HR
                      MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*S
*S
*S
*S GENERATION OF SEDIMENT NOT LIKELY, NO BULKING FACTOR ADDED.
*S COMPUTE HYDROGRAPH FOR ROADWAY STA. 206+00 TO STA. 274+00
*S PAVEMENT WIDTH=76'
COMPUTE NM HYD          ID=2  HYD NO=203.2  DA=0.01854 SQ MI
                      %A=0.0  %B=0.0  %C=0.0  %D=100.0
                      TP=0.15 HR
                      MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
*S TOTAL RUNOFF FROM ROADWAY AND B-5
ADD HYD                 NEW ID=1  NEW HYD=203.4  ADD ID=1 TO ID=2
PRINT HYD               ID=1 CODE=1
*S TOTAL DISCHARGE INTO AMOLE/HUBBELL DIVERSION CHANNEL
*S HYD NO. RB100E1B.HYD IS ***** AP 43 *****
** LH* HYD=RB100E1B.HYD (LH) IS RENAMED FROM  NEW HYD=203.5 (AVID)
ADD HYD                 ID=4 HYD=RB100E1B.HYD  ADD ID=1 TO ID=3
PRINT HYD               ID=4 CODE=1
PUNCH HYD               ID=4
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1   BK=1.15
*S COMPUTE HYDROGRAPH FOR B-2
COMPUTE NM HYD          ID=2  HYD NO=204.0  DA=0.0754 SQ MI
                      %A=100.0  %B=0.0  %C=0.0  %D=0.0
                      TP=0.1333 HR
                      MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
**LH* *S NOTE: DO NOT ROUTE, SINCE FLOW RUNS AWAY FROM ROADWAY
**LH* *S FLOW REACHES HUBBLE LAKE IN ARROYO THROUGH BASINS B-4 AND B-6
*S ROUTE ADD BY LH - ROUTE B-2 THROUGH B-4
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                      CH SLP=0.0386  FP SLOPE=0.0386
                      N=0.03  DIST=34
                      DIST    ELEV    DIST    ELEV    DIST    ELEV
                      0       106.0   12.0    100.0   22.0    100.0
                      34.0    106.0
COMPUTE TRAVEL TIME     ID=3  REACH NO=2  NO VS=1  L=3500 FT
                      SLP=0.0386
ROUTE                   OUTFLOW ID=3  OUTFLOW HYD=202.4
                      INFLOW ID=2  DT=0.0
PRINT HYD               ID=3 CODE=1
*S
*S
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1   BK=1.15
```

```
*S COMPUTE HYDROGRAPH FOR B-4
COMPUTE NM HYD          ID=2  HYD NO=205.0  DA=0.190 SQ MI
                        %A=100.0  %B=0.0  %C=0.0  %D=0.0
                        TP=0.21 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
*S ADD BASIN B-4 TO ROUTED FLOW
ADD HYD                 ID=3  HYD=205.1  I=3  II=2
PRINT HYD               ID=3  CODE=1
**LH* *S NOTE: DO NOT ROUTE, SINCE FLOW RUNS AWAY FROM ROADWAY
**LH* *S FLOW REACHES HUBBLE LAKE IN ARROYO THROUGH BASIN B-6
*S
*S
*S ROUTE ADD BY LH
*S ROUTE FLOW TO HUBBLE THROUGH B-6
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100.0 FT  MAX ELEV=106.0 FT
                        CH SLP=0.0198  FP SLOPE=0.0198
                        N=0.03  DIST=34
                        DIST    ELEV    DIST    ELEV    DIST    ELEV
                        0       106.0   12.0    100.0   22.0    100.0
                        34.0    106.0
COMPUTE TRAVEL TIME     ID=5  REACH NO=2  NO VS=1  L=5800 FT
                        SLP=0.0386
ROUTE                   OUTFLOW ID=5  OUTFLOW HYD=202.4
                        INFLOW ID=3  DT=0.0
PRINT HYD               ID=3 CODE=1
*S GENERATION OF SEDIMENT LIKELY, BULK FLOWS 15%
SEDIMENT BULK           CODE=1   BK=1.15
*S COMPUTE HYDROGRAPH FOR B-6
COMPUTE NM HYD          ID=1  HYD NO=206.0  DA=0.581 SQ MI
                        %A=100.0  %B=0.0  %C=0.0  %D=0.0
                        TP=0.39 HR
                        MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
**LH* *S NOTE: DO NOT ROUTE, SINCE FLOW RUNS AWAY FROM ROADWAY
**LH* *S FLOW DISCHARGES TO HUBBLE LAKE
*S ADD FLOW FROM B-6 TO ROUTED FLOW FROM B-4
*S HYD NO. RB100E2B.HYD IS ***** AP 44 *****
ADD HYD                 ID=3  HYD=RB100E2B.HYD  I=1  II=5
PRINT HYD               ID=3  CODE=1
PUNCH HYD               ID=3
*S
FINISH
```

BORREGA WATERSHED
AHYMO INPUT FILE
DEVELOPED CONDITIONS

```
START               0.0 HOURS    PC=0   PL=-1
*S
*S       BORREGA WATERSHED
*S
*S
*S 100-YR, 24-HR STORM
*S FILE NAME: BR_DMP1.DAT  (Final Draft Submittal #3)
*S BY: RICHARD STOCKTON
*S LAST REVISION: 07-15-99 CORRECTED BASIN 50110 ADD HYD AND ROUTE RES.
*S LH MADE POND LARGER AND DECREASED OUTFLOW.
*S MODIFIED BY:  URSGWC
*S DATE 2-26-2000
*S ** NOTE **
*S   RBSDP-DMP BASINS 21 AND 22 WILL BE DRAINED THROUGH THE BORREGA DAM FACILITY
     BEING DESIGNED BY WILSON & CO.  RECENT CONTRACTUAL DEVELOPMENTS HAVE RESULTED IN A
     CHANGE IN DAM DESIGN TO ALLOW FOR THE INCREASED LOAD.

*S**************************************************************************
*S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE BORREGA
*S BASIN.  FLOWS FROM THIS BASIN IS CONVEYED TO HUBBLE LAKE DETENTION FACILITY
*S VIA THE BORREGA DIVERSION CHANNEL.
*S
*S**************************************************************************
*S ANALYSIS ASSUMPTIONS:
*S**************************************************************************
*S 1. ALL LAND IN THIS BASIN IS MODELED AS DEVELOPED CONDITION.  DEVELOPED
*S    CONDITIONS ARE BASED ON LH'S RUNOFF CATAGPRY COLOR MAP.
*S
*S 2. THE PUNCH HYD COMMAND WAS ADDED TO THE END OF THIS FILE SO THE OUTFALL
*S    HYDROGRAPH COULD BE USED IN THE AMOLE DEL NORTE DEVELOPED CONDITIONS MODEL
*S    AA_DMP1.DAT, WHICH WILL BE USED IN THE ANALYSIS OF THE AMOLE ARROYO SYSTEM.
*S
*S 3. BULKING FACTORS FOR THE ESCARPMENT EASEMENT UNDER DEVELOPED CONDITIONS,
*S    HAVE BEEN REMOVED DUE TO BORREGA DETENTION BASIN IN THIS ALTERNATIVE.
*S
*S**************************************************************************
*S100 YEAR 24HR STORM DEVELOPED CONDITION
RAINFALL            TYPE=2  0.0  1.87  2.20  2.66    DT=0.05
** 10 YEAR 24HR STORM DEVELOPED CONDITION
**RAINFALL           TYPE=2  0.0  1.25  1.47  1.77    DT=0.05
**  2 YEAR 24HR STORM DEVELOPED CONDITION
**RAINFALL           TYPE=2  0.0  0.74  0.95  1.15    DT=0.05
*S**************************************************************************
**
*S  LH BASIN NO. 50101
**S BULK FLOWS FROM ESCARPMENT EASEMENT
**SEDIMENT BULK          CODE=1  BK=1.021
**COMPUTE HYD ABOVE AP 101  BASIN 7-A
COMPUTE NM HYD       ID=1    HYD=101.1   DA=0.154 SQ MI
                     PER A=0   PER B=38   PER C=20  PER D=42
                     TP=-0.1333    RAIN=-1
PRINT HYD            ID=1    CODE=10
*
*
** ROUTE OLF FROM AP 101 TO AP 200
** ASSUME NATURAL ARROYO
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=3
                     ELMIN=52    ELMAX=58
                     CH SLP=.0338        FP SLP=.0338
                     N=.035  STA=111   N=.035  STA=162     N=.035  STA=210
                     DIST    ELEV      DIST    ELEV        DIST    ELEV
                     100     56        111     54          123     52
                     140     52        162     54          175     56
                     210     58
COMPUTE TRAVEL TIME  ID=10     REACH=1     NO VS=1
                     L=2362.5    SLP=.0338
ROUTE                ID=10     HYD=201.1
```

```
                    INFLOW ID=1     DT=.05
*
** ROUTED OLF FROM AP 101 AT AP 200
*
PRINT HYD           ID=10      CODE=1
*
** ROUTE OLF FROM AP 200 TO AP 102
** ASSUME NATURAL CHANNEL
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=3
                    ELMIN=52    ELMAX=58
                    CH SLP=.0338        FP SLP=.0338
                    N=.035  STA=111   N=.035  STA=162     N=.035  STA=210
                    DIST    ELEV      DIST    ELEV        DIST    ELEV
                    100     56        111     54          123     52
                    140     52        162     54          175     56
                    210     58
COMPUTE TRAVEL TIME  ID=2     REACH=1     NO VS=1
                    L=2050.0  SLP=.0338
ROUTE               ID=2      HYD=101.3
                    INFLOW ID=10    DT=.05
*
** ROUTED OLF FROM AP 200 AT AP 102
*
PRINT HYD           ID=2       CODE=1
*
*
*
*S  LH BASIN NO. 50102
** NO BULKING THIS BASIN
**SEDIMENT BULK       CODE=1  BK=1.0
** COMPUTE HYD ABOVE AP 102  BASIN 7-C
COMPUTE NM HYD      ID=1    HYD=102.1   DA=0.1953 SQ MI
                    PER A=0   PER B=28   PER C=23   PER D=49
                    TP=-0.1677    RAIN=-1
PRINT HYD           ID=1    CODE=1
*
*
** ADD ROUTED OLF FROM BASIN 7-A TO BASIN 7-C
ADD HYD             ID=2      HYD=102.3
                    ID=1      ID=2
PRINT HYD           ID=2      CODE=1
*
** TOTAL HYD AT AP 102
PRINT HYD           ID=2      CODE=1
*
*
*S  LH BASIN NO. 50105 (EAST)
** NO BULKING FACTOR THIS BASIN
**SEDIMENT BULK           CODE=1  BK=1.0
** COMPUTE HYD ABOVE AP 105  BASIN 7-E
COMPUTE NM HYD      ID=1    HYD=105.1   DA=0.0521 SQ MI
                    PER A=0    PER B=28   PER C=23 PER D=49
                    TP=-0.1333    RAIN=-1
PRINT HYD           ID=1    CODE=1
*
**
*
*S  LH BASIN NO. 50106
** COMPUTE HYD ABOVE AP 106  BASIN 7-D
COMPUTE NM HYD      ID=3    HYD=106.1   DA=0.09702 SQ MI
                    PER A=0    PER B=28   PER C=23   PER D=49
                    TP=-0.1505    RAIN=-1
PRINT HYD           ID=3    CODE=1
*
*
** ADD OLF FROM BASIN 7-E TO BASIN 7-D
ADD HYD             ID=4      HYD=106.3
```

```
                    ID=1      ID=3
PRINT HYD           ID=4      CODE=1
*
*
** ROUTE FLOW FROM BASINS 7-E, AND 7-D THROUGH BASIN 7-F TO AP 102
** ASSUME NATURAL ARROYO
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=3
                    ELMIN=26    ELMAX=34
                    CH SLP=.0310        FP SLP=.0310
                    N=.035  STA=263   N=.035  STA=366     N=.035  STA=380
                    DIST    ELEV      DIST    ELEV        DIST    ELEV
                    100     34        170     32          263     30
                    285     28        305     26          328     26
                    346     28        366     30          380     30.8
COMPUTE TRAVEL TIME  ID=3      REACH=1     NO VS=1
                    L=613    SLP=.0310
ROUTE               ID=3      HYD=106.4
                    INFLOW ID=4     DT=.05
*
** ROUTED OLF AT AP 102
*
PRINT HYD           ID=3       CODE=1
*
*
*S  LH BASIN NO. 50107
** COMPUTE HYD ABOVE AP 107  BASIN 7-F
COMPUTE NM HYD      ID=1    HYD=107.1   DA=0.01146 SQ MI
                    PER A=0   PER B=28   PER C=23   PER D=49
                    TP=-0.1333    RAIN=-1
PRINT HYD           ID=1    CODE=1
*
*
** ADD OLF FROM BASINS 7-E AND 7-D TO BASIN 7-F
ADD HYD             ID=3      HYD=107.3
                    ID=1      ID=3
PRINT HYD           ID=3      CODE=1
*
*
** ADD OLF FROM BASINS 7-E, 7-D AND 7-F TO OLF FROM BASINS 7-A AND 7-C
ADD HYD             ID=2      HYD=107.4
                    ID=2      ID=3
PRINT HYD           ID=2      CODE=1
*
*
** ROUTE FLOW ABOVE AP 107 THROUGH BASIN 7-H
** ASSUME NATURAL ARROYO
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=3
                    ELMIN=46    ELMAX=51.3
                    CH SLP=.0236        FP SLP=.0236
                    N=.035  STA=119   N=.035  STA=181     N=.035  STA=200
                    DIST    ELEV      DIST    ELEV        DIST    ELEV
                    100     50.4      119     50          131     48
                    142     46        159     46          172     48
                    181     50        191     51          200     51.3
COMPUTE TRAVEL TIME  ID=3      REACH=1     NO VS=1
                    L=4372    SLP=.0236
ROUTE               ID=3      HYD=107.5
                    INFLOW ID=2     DT=.05
*
** ROUTED OLF FROM AP 107
*
PRINT HYD           ID=3       CODE=1
*
*
*S  LH BASIN NO. 50108
** COMPUTE HYD ABOVE AP 108  BASIN 7-H
COMPUTE NM HYD      ID=1    HYD=108.1   DA=0.21455 SQ MI
```

```
                    PER A=0   PER B=28   PER C=23   PER D=49
                    TP=-0.2120    RAIN=-1
PRINT HYD           ID=1    CODE=1
*
*
** ADD OLF FROM AP 107 TO BASIN 7-H
ADD HYD             ID=3      HYD=108.3
                    ID=1      ID=3
PRINT HYD           ID=3      CODE=1
*
*
*S  LH BASIN NO. 50109
** COMPUTE HYD ABOVE AP 109  BASIN 7-G
COMPUTE NM HYD      ID=1    HYD=109.1   DA=0.1914 SQ MI
                    PER A=0   PER B=28   PER C=23   PER D=49
                    TP=-0.2031    RAIN=-1
PRINT HYD           ID=1    CODE=1
*
*
** ADD OLF FROM BASINS ABOVE 7-H TO BASIN 7-G
ADD HYD             ID=3   HYD=109.3 ID=1      ID=3
PRINT HYD           ID=3      CODE=1
*
************************
** TOTAL FLOW AT AP 109 *
************************
*
** ROUTE FLOW ABOVE AP 109 TO FIRST CHANNEL DROP STRUCTURE
** ASSUME NATURAL ARROYO
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=1
                    ELMIN=0    ELMAX=5
                    CH SLP=.0286       FP SLP=.0286
                    N=.032  STA=60
                    DIST    ELEV      DIST    ELEV        DIST    ELEV
                     0       5         20      0           40      0
                     60      5
COMPUTE TRAVEL TIME  ID=4      REACH=1     NO VS=1
                    L=230     SLP=.0286
ROUTE               ID=4      HYD=109.4
              INFLOW ID=3     DT=.05
*
** ROUTED OLF FROM AP 109
*
PRINT HYD           ID=4       CODE=1
*
** ROUTE FLOW FROM FIRST DROP STRUCTURE TO CONFLUENCE WITH BASIN 50201
** ASSUME NATURAL ARROYO
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=1
                    ELMIN=0    ELMAX=7
                    CH SLP=.004        FP SLP=.004
                    N=.033  STA=60
                    DIST    ELEV      DIST    ELEV        DIST    ELEV
                     0       7         28      0           48      0
                     76      7
COMPUTE TRAVEL TIME  ID=3      REACH=1     NO VS=1
                    L=1000    SLP=.004
ROUTE               ID=3      HYD=109.5
                     INFLOW ID=4     DT=.05
*
** ROUTED OLF FROM AP 109
*
PRINT HYD           ID=3       CODE=1
*
*
*S  LH BASIN NO. 50201

**************************************************************************
```

```
**   BASIN B-6 DRAINING TO BORREGA DAM                                  **
**   THIS AREA INCLUDES BASINS 21, 22, AND A PORTION OF BASIN 20        **
**********************************************************************

** COMPUTE HYD ABOVE AP 110  BASIN B-6
COMPUTE NM HYD        ID=1    HYD=B6   DA=0.34955 SQ MI
                      PER A=0   PER B=28   PER C=23   PER D=49
                      TP=-0.2330    RAIN=-1
PRINT HYD             ID=1    CODE=1
*
*S  LH BASIN NO. 50110
** COMPUTE HYD ABOVE AP 111  BASIN 7-I
COMPUTE NM HYD        ID=2    HYD=110.0   DA=0.05248 SQ MI
                      PER A=4   PER B=26   PER C=22   PER D=48
                      TP=-0.1333    RAIN=-1
PRINT HYD             ID=2    CODE=1
*
** ADD OLF FROM AP 110 TO BASIN 7-I AT AP 111
ADD HYD               ID=2  HYD=110.1  ID=3      ID=2
*
** ADD OLF FROM AP 110 TO BASIN 7-I AT AP 111
ADD HYD               ID=4      HYD=110.2 ID=2   ID=1
*
*
************************
** TOTAL FLOW AT AP 110 *
************************
PRINT HYD             ID=4      CODE=1
*
*S ROUTE FLOW THROUGH BORREGA POND QMAX=225 CFS AT INLET TO HUBBELL LAKE
ROUTE RESERVOIR       ID=99  HYD=BPOND.OUT ID=4 CODE=5
                      OUTFLOW     STORAGE     ELEV
                       0           0           100
                       162.9       0.1         101
                       163.0       94          102
                       163.1       94.1        102.1
PRINT HYD              ID=99 CODE=1
*S HYD=BPOND.OUT IS *****AP 51*****
** ROUTE FLOW ABOVE AP 110 TO THE BORREGA OUTFALL IN HUBBELL
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=1
                      ELMIN=0    ELMAX=7
                      CH SLP=.004        FP SLP=.004
                      N=.033  STA=60
                      DIST    ELEV      DIST    ELEV        DIST    ELEV
                       0       7         28      0           48      0
                       76      7
COMPUTE TRAVEL TIME   ID=4      REACH=1     NO VS=1
                      L=1849.5    SLP=.004
ROUTE                 ID=4      HYD=110.5
                      INFLOW ID=99     DT=.05
*
PRINT HYD             ID=4       CODE=1
*
*S  LH BASIN NO. 50111
** COMPUTE HYD ABOVE AP 111  BASIN 7-I
COMPUTE NM HYD        ID=2    HYD=111.0   DA=0.05247 SQ MI
                      PER A=4   PER B=26   PER C=22   PER D=48
                      TP=-0.1333    RAIN=-1
PRINT HYD             ID=2    CODE=1
*
** ADD OLF FROM AP 110 TO BASIN 7-I AT AP 111
ADD HYD               ID=2  HYD=BR_DMP1.HYD  ID=4      ID=2
*
*
*S HYD=BR_DMP1.HYD IS *****AP 52*****
PUNCH HYD             ID=2
*
```

FINISH

APPENDIX 6

TIME OF CONCENTRATION WORK SHEETS

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 1a

				Conveyance factor, k
Area:	1040489	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.03732	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1650	ft	Upstream Z:	-49	Downstream Z:	-92
L_2:	57	ft	Upstream Z:	-92	Downstream Z:	-94
L_t:	1707	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.026061	ft/ft	Slope Check:	Slope OK
s_2:	-0.035088	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.209	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.139 hrs

Principle Zoning Code: C-2

Land Treatment Breakdown, %			
A	B	C	D
	10%		90%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 1b

Area:		
633295	ft^2	
	acres	
0.02272	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1218	ft	Upstream Z:	-48	Downstream Z:	-60
L_2:	0	ft	Upstream Z:	-60	Downstream Z:	-60
L_t:	1218	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.009852	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.274 hrs
Min t_c check:	value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.183 hrs

Principle Zoning Code: C-2

Land Treatment Breakdown, %			
A	B	C	D
	10%		90%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 2

			Conveyance factor, k
Area:	480807	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.01725	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	759	ft	Upstream Z:	-38	Downstream Z:	-60
L_2:	478	ft	Upstream Z:	-60	Downstream Z:	-57
L_t:	1237	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.028986	ft/ft	Slope Check:	Slope OK
s_2:	0.006276	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.185	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%
		20%	

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 3

			Conveyance factor, k
Area:	621549	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.02230	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	808	ft	Upstream Z:	-58	Downstream Z:	-79
L_2:	565	ft	Upstream Z:	-79	Downstream Z:	-72
L_t:	1373	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.025990	ft/ft	Slope Check:	Slope OK
s_2:	0.012389	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.208	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.138 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 4

Area:	1416347	ft^2
		acres
	0.05080	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1756	ft	Upstream Z:	-80	Downstream Z:	-109
L_2:	1076	ft	Upstream Z:	-109	Downstream Z:	-93
L_t:	2832	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.016515	ft/ft	Slope Check:	Slope OK
s_2:	0.014870	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.411 hrs
Min t_c check:	value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.274 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%

20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 5a

Area:	957504	ft^2
		acres
	0.03435	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1351	ft	Upstream Z:	-58	Downstream Z:	-98
L_2:	134	ft	Upstream Z:	-98	Downstream Z:	-104
L_t:	1485	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.029608	ft/ft	Slope Check:	Slope OK
s_2:	-0.044776	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.175	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: R-2 / R-3

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 5b

				Conveyance factor, k
Area:	135292	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.00485	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1351	ft	Upstream Z:	-58	Downstream Z:	-98
L_2:	134	ft	Upstream Z:	-98	Downstream Z:	-104
L_t:	1485	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.029608	ft/ft	Slope Check:	Slope OK
s_2:	-0.044776	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.175	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: R-2 / R-3

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 5c

				Conveyance factor, k
Area:	78273	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.00281	mi^2	Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1109	ft	Upstream Z:	-58	Downstream Z:	-88
L_2:	632	ft	Upstream Z:	-88	Downstream Z:	-94
L_t:	1741	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.027051	ft/ft	Slope Check:	Slope OK
s_2:	-0.009494	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.216	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.144 hrs

Principle Zoning Code: C-1

Land Treatment Breakdown, %			
A	B	C	D
		10%	90%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 5d

Area:	230829	ft^2
		acres
	0.00828	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	505	ft	Upstream Z:	-82	Downstream Z:	-94
L_2:	452	ft	Upstream Z:	-94	Downstream Z:	-95
L_t:	957	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.023762	ft/ft	Slope Check:	Slope OK
s_2:	-0.002212	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.172 hrs
Min t_c check:	Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: Park

Land Treatment Breakdown, %			
A	B	C	D
	93%		7%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 6a

Area:	741164	ft^2
		acres
	0.02659	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	745	ft	Upstream Z:	-88	Downstream Z:	-106
L_2:	0	ft	Upstream Z:	-106	Downstream Z:	-106
L_t:	745	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.024161	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.133 hrs
Min t_c check:	Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: Mixed, R/C/O

Land Treatment Breakdown, %			
A	B	C	D
	15%	5%	80%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 6b

				Conveyance factor, k
Area:	422968	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.01517	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1003	ft	Upstream Z:	-92	Downstream Z:	-115
L_2:	0	ft	Upstream Z:	-115	Downstream Z:	-115
L_t:	1003	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.022931	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.160	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: Mixed, R/C/O

Land Treatment Breakdown, %			
A	B	C	D
	15%	5%	80%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 7a

Area:		
595906	ft^2	
	acres	
0.02138	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	950	ft	Upstream Z:	-100	Downstream Z:	-117
L_2:	0	ft	Upstream Z:	-117	Downstream Z:	-117
L_t:	950	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.017895	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.176	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p=	0.133	hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 7b

Area:		
422968	ft^2	
	acres	
0.01517	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1207 ft	Upstream Z:	-104	Downstream Z:	-126
L_2:	205 ft	Upstream Z:	-126	Downstream Z:	-129
L_t:	1412 ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.018227 ft/ft	Slope Check:	Slope OK
s_2:	-0.014634 ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.216	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p=	0.144	hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%

20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 8

			Conveyance factor, k
Area:	526939	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.01890	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	1385	ft	Upstream Z:	-123	Downstream Z:	-147
L_2:	0	ft	Upstream Z:	-147	Downstream Z:	-147
L_t:	1385	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.017329	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.225	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.150 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 20% 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 9a

				Conveyance factor, k
Area:	681828	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.02446	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1391	ft	Upstream Z:	-105	Downstream Z:	-134
L_2:	0	ft	Upstream Z:	-134	Downstream Z:	-134
L_t:	1391	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.020848	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.205 hrs
Min t_c check:	value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.137 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 20% 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 9b

Area:		
969250	ft^2	
	acres	
0.03477	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1566 ft	Upstream Z:	-107	Downstream Z:	-144
L_2:	0 ft	Upstream Z:	-144	Downstream Z:	-144
L_t:	1566 ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.023627 ft/ft	Slope Check:	Slope OK
s_2:	0.000000 ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.209 hrs
Min t_c check:	value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.139 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%
		20%	

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 10

Area:		
725893	ft^2	
	acres	
0.02604	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1238 ft	Upstream Z:	-87	Downstream Z:	-120
L_2:	0 ft	Upstream Z:	-120	Downstream Z:	-120
L_t:	1238 ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.026656 ft/ft	Slope Check:	Slope OK
s_2:	0.000000 ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.169 hrs
Min t_c check:	Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 11

Area:	654853	ft^2
		acres
	0.02349	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1113	ft	Upstream Z:	-60	Downstream Z:	-99
L_2:	0	ft	Upstream Z:	-99	Downstream Z:	-99
L_t:	1113	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.035040	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.138 hrs
Min t_c check:	Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	30%		70%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 12

				Conveyance factor, k
Area:	578223	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.02074	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1356	ft	Upstream Z:	-76	Downstream Z:	-121
L_2:	59	ft	Upstream Z:	-121	Downstream Z:	-122
L_t:	1415	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.033186	ft/ft	Slope Check:	Slope OK
s_2:	-0.016949	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.164	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 13

				Conveyance factor, k
Area:	1671995	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.05997	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1965	ft	Upstream Z:	-76	Downstream Z:	-120
L_2:	71	ft	Upstream Z:	-120	Downstream Z:	-122
L_t:	2036	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.022392	ft/ft	Slope Check:	Slope OK
s_2:	-0.028169	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.255 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.170 hrs

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%

25% 20% 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 14

Area:	976412	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.03502	mi^2	Subreach 2	3.0

Conveyance factor, k

Min. Design Slope: -0.005

L_1:	1118	ft	Upstream Z:	-74	Downstream Z:	-105
L_2:	241	ft	Upstream Z:	-105	Downstream Z:	-106
L_t:	1359	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.027728	ft/ft	Slope Check:	Slope OK
s_2:	-0.004149	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.187 hrs
Min t_c check:	Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%

25% 20% 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 15

				Conveyance factor, k
Area:	1318322	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.04729	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	2000	ft	Upstream Z:	-100	Downstream Z:	-144
L_2:	290	ft	Upstream Z:	-144	Downstream Z:	-147
L_t:	2290	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.022000	ft/ft	Slope Check:	Slope OK
s_2:	-0.010345	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.283 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.189 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%
			20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 16

Area:		
1470829	ft^2	
	acres	
0.05276	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1681 ft	Upstream Z:	-107	Downstream Z:	-146
L_2:	1401 ft	Upstream Z:	-146	Downstream Z:	-149
L_t:	3082 ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.023200 ft/ft	Slope Check:	Slope OK
s_2:	-0.002141 ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.404	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.270 hrs

Principle Zoning Code: Mixed R/C/O

Land Treatment Breakdown, %			
A	B	C	D
	15%	5%	80%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 17

				Conveyance factor, k
Area:	783017	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.02809	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1425	ft	Upstream Z:	5060	Downstream Z:	5027
L_2:	289	ft	Upstream Z:	5027	Downstream Z:	5025
L_t:	1714	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.023158	ft/ft	Slope Check:	Slope OK
s_2:	-0.006920	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.230 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.153 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%
			20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 18

Area:		
998806	ft^2	
	acres	
0.03583	mi^2	

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1424	ft	Upstream Z:	-150	Downstream Z:	-151
L_2:	0	ft	Upstream Z:	-151	Downstream Z:	-151
L_t:	1424	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.000702	ft/ft	Slope Check:	Min Slope Condition not met*
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.426 hrs
Min t_c check:	value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.284 hrs

Principle Zoning Code: IP

Land Treatment Breakdown, %			
A	B	C	D
	20%		80%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 20

				Conveyance factor, k
Area:	807395	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.02896	mi^2	Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	840	ft	Upstream Z:	5014	Downstream Z:	4994
L_2:	0	ft	Upstream Z:	4994	Downstream Z:	4994
L_t:	840	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.023810	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.142 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 21

Area:	2221886	ft^2		
		acres		
	0.07970	mi^2		

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	2679	ft	Upstream Z:	5086	Downstream Z:	5016
L_2:	0	ft	Upstream Z:	5016	Downstream Z:	5016
L_t:	2679	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Max Sub Reach of 2000 ft exceeded
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.026129	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.294 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.196 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%
			20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 22

Area:	1200259	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.04305	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Conveyance factor, k

L_1:	1417	ft	Upstream Z:	5126	Downstream Z:	5086
L_2:	0	ft	Upstream Z:	5086	Downstream Z:	5086
L_t:	1417	ft				

Min. Design Slope: -0.005

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.028229	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.179	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 23

Area:	943254	ft^2		Conveyance factor, k
		acres	First 400 ft of subreach 1	0.7
	0.03383	mi^2	Remainder of subreach 1, up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	878	ft	Upstream Z:	5148	Downstream Z:	5112
L_2:	607	ft	Upstream Z:	5112	Downstream Z:	5106
L_t:	PP	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.041002	ft/ft	Slope Check:	Slope OK
s_2:	-0.009885	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.168	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 20% 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 24

Area:	838692	ft^2		Conveyance factor, k
		acres	First 400 ft of subreach 1	0.7
	0.03008	mi^2	Remainder of subreach 1, up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1387	ft	Upstream Z:	5094	Downstream Z:	5056
L_2:	307	ft	Upstream Z:	5056	Downstream Z:	5061
L_t:	1694	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.027397	ft/ft	Slope Check:	Slope OK
s_2:	0.016287	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.219	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.146 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~		~~65%~~
	25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 25

Area:	800381	ft^2
		acres
	0.02871	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1364 ft	Upstream Z:	5138	Downstream Z:	5099
L_2:	199 ft	Upstream Z:	5099	Downstream Z:	5098
L_t:	1563 ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.028592 ft/ft	Slope Check:	Slope OK
s_2:	-0.005025 ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.199 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%

20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 26

			Conveyance factor, k
Area:	1415269	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.05077	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	1392	ft	Upstream Z:	-31	Downstream Z:	-70
L_2:	100	ft	Upstream Z:	-70	Downstream Z:	-71
L_t:	1492	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.028017	ft/ft	Slope Check:	Slope OK
s_2:	-0.010000	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.186 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%

		20%	

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 27a

Area:	901962	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.03235	mi^2	Subreach 2	3.0

Conveyance factor, k

Min. Design Slope: -0.005

L_1:	1372	ft	Upstream Z:	3	Downstream Z:	-39
L_2:	376	ft	Upstream Z:	-39	Downstream Z:	-47
L_t:	1748	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.030612	ft/ft	Slope Check:	Slope OK
s_2:	-0.021277	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.192	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 27b

				Conveyance factor, k
Area:	544970	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.01955	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	908	ft	Upstream Z:	1	Downstream Z:	-31
L_2:	256	ft	Upstream Z:	-31	Downstream Z:	-29
L_t:	1164	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.035242	ft/ft	Slope Check:	Slope OK
s_2:	0.007813	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.156	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%
	25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 28a

Area:	678397	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.02433	mi^2	Subreach 2	3.0

Conveyance factor, k

Min. Design Slope: -0.005

L_1:	863	ft	Upstream Z:	11	Downstream Z:	-22
L_2:	0	ft	Upstream Z:	-22	Downstream Z:	-22
L_t:	863	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.038239	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.114 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~		~~65%~~
	25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 28b

				Conveyance factor, k
Area:	637280	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.02286	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1039	ft	Upstream Z:	11	Downstream Z:	-20
L_2:	0	ft	Upstream Z:	-20	Downstream Z:	-20
L_t:	1039	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.029836	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.143 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		65% 75%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 29a

			Conveyance factor, k
Area:	750069	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.02691	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	1244	ft	Upstream Z:	-14	Downstream Z:	-47
L_2:	120	ft	Upstream Z:	-47	Downstream Z:	-49
L_t:	1364	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.026527	ft/ft	Slope Check:	Slope OK
s_2:	-0.016667	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.178 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%		~~65%~~ 55%

20%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 29b

Area:	496455	ft^2
		acres
	0.01781	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1022	ft	Upstream Z:	-20	Downstream Z:	-51
L_2:	232	ft	Upstream Z:	-51	Downstream Z:	-47
L_t:	1254	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.030333	ft/ft	Slope Check:	Slope OK
s_2:	0.017241	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.171 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 30

Area:	1301878	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.04670	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Conveyance factor, k

Min. Design Slope: -0.005

L_1:	1383	ft	Upstream Z:	-34	Downstream Z:	-72
L_2:	228	ft	Upstream Z:	-72	Downstream Z:	-71
L_t:	1611	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.027477	ft/ft	Slope Check:	Slope OK
s_2:	0.004386	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.208	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.139 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 31a

Area:		ft^2
	23.9480	acres
	0.03742	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1626	ft	Upstream Z:	-20	Downstream Z:	-73
L_2:	261	ft	Upstream Z:	-73	Downstream Z:	-66
L_t:	1887	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.032595	ft/ft	Slope Check:	Slope OK
s_2:	0.026820	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.216	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.144 hrs

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%
	25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 31b

				Conveyance factor, k
Area:		ft^2	First 400 ft of subreach 1	0.7
	15.8970	acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.02484	mi^2	Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1480	ft	Upstream Z:	-22	Downstream Z:	-68
L_2:	376	ft	Upstream Z:	-68	Downstream Z:	-66
L_t:	1856	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.031081	ft/ft	Slope Check:	Slope OK
s_2:	0.005319	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.224 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.150 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 31c

Area:		ft^2
	6.3400	acres
	0.00991	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	733	ft	Upstream Z:	-24	Downstream Z:	-47
L_2:	700	ft	Upstream Z:	-47	Downstream Z:	-57
L_t:	1433	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.031378	ft/ft	Slope Check:	Slope OK
s_2:	-0.014286	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.170 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 32a

Area:		ft^2
	23.0500	acres
	0.03602	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1661	ft	Upstream Z:	32	Downstream Z:	-10
L_2:	1140	ft	Upstream Z:	-10	Downstream Z:	-33
L_t:	2801	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.025286	ft/ft	Slope Check:	Slope OK
s_2:	-0.020175	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.284 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.190 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 32b

Area:		ft^2
	14.8440	acres
	0.02319	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1694	ft	Upstream Z:	30	Downstream Z:	-23
L_2:	411	ft	Upstream Z:	-23	Downstream Z:	-27
L_t:	2105	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.031287	ft/ft	Slope Check:	Slope OK
s_2:	-0.009732	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.230	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.153 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 32c

				Conveyance factor, k
Area:		ft^2	First 400 ft of subreach 1	0.7
	22.2910	acres	Remainder of subreach 1, up to 2,000 ft.	2.0
	0.03483	mi^2	Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1305	ft	Upstream Z:	32	Downstream Z:	-12
L_2:	315	ft	Upstream Z:	-12	Downstream Z:	-11
L_t:	1620	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.033716	ft/ft	Slope Check:	Slope OK
s_2:	0.003175	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.196 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 33

Area:		
		ft^2
	24.8400	acres
	0.03881	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1270	ft	Upstream Z:	8	Downstream Z:	-35
L_2:	444	ft	Upstream Z:	-35	Downstream Z:	-37
L_t:	1714	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.033858	ft/ft	Slope Check:	Slope OK
s_2:	-0.004505	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.210	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.140 hrs

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 34

				Conveyance factor, k
Area:	1082033	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.03881	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1366	ft	Upstream Z:	-19	Downstream Z:	-64
L_2:	179	ft	Upstream Z:	-64	Downstream Z:	-59
L_t:	1545	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.032943	ft/ft	Slope Check:	Slope OK
s_2:	0.027933	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.185	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: C-1

Land Treatment Breakdown, %			
A	B	C	D
	10%		90%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 35

				Conveyance factor, k
Area:	1275789	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.04576	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	859	ft	Upstream Z:	-16	Downstream Z:	-46
L_2:	629	ft	Upstream Z:	-46	Downstream Z:	-46
L_t:	1488	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.034924	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.201 hrs

Min t_c check: value OK

Calculate AHYMO Time to Peak, t_p:

t_p= 0.134 hrs

Principle Zoning Code: C-2

Land Treatment Breakdown, %			
A	B	C	D
	10%		90%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 36

				Conveyance factor, k
Area:	702728	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.02521	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1127	ft	Upstream Z:	15	Downstream Z:	-14
L_2:	121	ft	Upstream Z:	-14	Downstream Z:	-16
L_t:	1248	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.025732	ft/ft	Slope Check:	Slope OK
s_2:	-0.016529	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.171 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: R-2 / RT / MH

Land Treatment Breakdown, %			
A	B	C	D
	25%		75%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 37

				Conveyance factor, k
Area:	838827	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.03009	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	392	ft	Upstream Z:	32	Downstream Z:	20
L_2:	448	ft	Upstream Z:	20	Downstream Z:	12
L_t:	840	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.030612	ft/ft	Slope Check:	Slope OK
s_2:	-0.017857	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c=	0.120	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 38

				Conveyance factor, k
Area:	189538	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.00680	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	670	ft	Upstream Z:	24	Downstream Z:	-1
L_2:	48	ft	Upstream Z:	-1	Downstream Z:	0
L_t:	718	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.037313	ft/ft	Slope Check:	Slope OK
s_2:	0.020833	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.108	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: Park

Land Treatment Breakdown, %			
A	B	C	D
	93%		7%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 39

Area:	545823	ft^2		
		acres		
	0.01958	mi^2		

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	268	ft	Upstream Z:	-12	Downstream Z:	-15
L_2:	1627	ft	Upstream Z:	-15	Downstream Z:	-3
L_t:	1895	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.011194	ft/ft	Slope Check:	Slope OK
s_2:	0.007376	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.314	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.209 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35% 25%	20%	65% 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 39b

				Conveyance factor, k
Area:	370373	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.01329	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	729	ft	Upstream Z:	26	Downstream Z:	7
L_2:	129	ft	Upstream Z:	7	Downstream Z:	6
L_t:	858	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.026063	ft/ft	Slope Check:	Slope OK
s_2:	-0.007752	ft/ft	Slope Check:	Slope OK

Calculate Time of Concentration, t_c:

t_c= 0.140 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 40a

			Conveyance factor, k
Area:	457457	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.01641	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	547	ft	Upstream Z:	-12	Downstream Z:	-27
L_2:	0	ft	Upstream Z:	-27	Downstream Z:	-27
L_t:	547	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.027422	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.108	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%
	25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 40b

				Conveyance factor, k
Area:	511530	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.01835	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	990	ft	Upstream Z:	-3	Downstream Z:	-26
L_2:	0	ft	Upstream Z:	-26	Downstream Z:	-26
L_t:	990	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.023232	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.158 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%
	25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: 41a

				Conveyance factor, k
Area:	521406	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.01870	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	722	ft	Upstream Z:	-1	Downstream Z:	-22
L_2:	295	ft	Upstream Z:	-22	Downstream Z:	-10
L_t:	1017	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.029086	ft/ft	Slope Check:	Slope OK
s_2:	0.040678	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.158 hrs
Min t_c check:	Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: ASW1

Area:	1232748	ft^2
		acres
	0.04422	mi^2

	Conveyance factor, k
First 400 ft of subreach 1	0.7
Remainder of subreach 1, up to 2,000 ft.	2.0
Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1308	ft	Upstream Z:	5078	Downstream Z:	5035
L_2:	0	ft	Upstream Z:	5035	Downstream Z:	5035
L_t:	1308	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.032875	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c= 0.157 hrs

Min t_c check: Min not meet, use 0.20 hrs.

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%
	15%	20%	65%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: ASW2

			Conveyance factor, k
Area:	1074987	ft^2	First 400 ft of subreach 1: 0.7
		acres	Remainder of subreach 1, up to 2,000 ft.: 2.0
	0.03856	mi^2	Subreach 2: 3.0

Min. Design Slope: -0.005

L_1:	1407	ft	Upstream Z:	5020	Downstream Z:	4996
L_2:	0	ft	Upstream Z:	4996	Downstream Z:	4996
L_t:	1407	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.017058	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.229	hrs
Min t_c check:	value OK	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.152 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	35%		65%
	25%	25%	55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: ZG1

				Conveyance factor, k
Area:	555280	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.01992	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	413	ft	Upstream Z:	5112	Downstream Z:	5092
L_2:	629	ft	Upstream Z:	5092	Downstream Z:	5090
L_t:	1042	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.048426	ft/ft	Slope Check:	Slope OK
s_2:	-0.003180	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.155	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	~~65%~~ 55%

* When min slope is not met, a default value will be used in the calculation.

Rio Bravo Sector
Development Plan-
Master Drainage Plan
URS Greiner Woodward Clyde

Basin ID: ZG2

				Conveyance factor, k
Area:	579102	ft^2	First 400 ft of subreach 1	0.7
		acres	Remainder of subreach 1,	
	0.02077	mi^2	up to 2,000 ft.	2.0
			Subreach 2	3.0

Min. Design Slope: -0.005

L_1:	1083	ft	Upstream Z:	5092	Downstream Z:	5072
L_2:	0	ft	Upstream Z:	5072	Downstream Z:	5072
L_t:	1083	ft				

Maximum Reach Length Check: Reach Length OK

L_1 Length Check:	Sub Reach Length OK
L_2 Length Check:	Sub Reach Length OK

s_1:	-0.018467	ft/ft	Slope Check:	Slope OK
s_2:	0.000000	ft/ft	Slope Check:	Min Slope Condition not met*

Calculate Time of Concentration, t_c:

t_c=	0.187	hrs
Min t_c check:	Min not meet, use 0.20 hrs.	

Calculate AHYMO Time to Peak, t_p:

t_p= 0.133 hrs

Principle Zoning Code: SF / RLT

Land Treatment Breakdown, %			
A	B	C	D
	~~35%~~ 25%	20%	55%

* When min slope is not met, a default value will be used in the calculation.

APPENDIX 7

PIPE FLOW WORK SHEETS

RBSDP-DMP
Worksheet for Circular Channel

A - 1

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.019000	ft/ft
Discharge	175.00	cfs

Results		
Depth	3.82	ft
Diameter	46	in
Flow Area	11.5	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	3.66	ft
Percent Full	100.0	%
Critical Slope	0.016540	ft/ft
Velocity	15.28	ft/s
Velocity Head	3.63	ft
Specific Energy	7.45	ft
Froude Number	0.00	
Maximum Discharg	188.25	cfs
Discharge Full	175.00	cfs
Slope Full	0.019000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

A-2

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.027000	ft/ft
Discharge	242.00	cfs

Results		
Depth	4.04	ft
Diameter	48	in
Flow Area	12.8	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	3.96	ft
Percent Full	100.0	%
Critical Slope	0.024169	ft/ft
Velocity	18.90	ft/s
Velocity Head	5.55	ft
Specific Energy	9.59	ft
Froude Number	0.00	
Maximum Discharg	260.32	cfs
Discharge Full	242.00	cfs
Slope Full	0.027000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

A-3

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.030000	ft/ft
Discharge	348.00	cfs

Results		
Depth	4.54	ft
Diameter	54	in
Flow Area	16.2	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	4.47	ft
Percent Full	100.0	%
Critical Slope	0.027175	ft/ft
Velocity	21.53	ft/s
Velocity Head	7.20	ft
Specific Energy	11.74	ft
Froude Number	0.00	
Maximum Discharg	374.35	cfs
Discharge Full	348.00	cfs
Slope Full	0.030000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

A-4

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.022000	ft/ft
Discharge	461.00	cfs

Results		
Depth	5.34	ft
Diameter	64	in → 66"
Flow Area	22.4	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	5.21	ft
Percent Full	100.0	%
Critical Slope	0.019511	ft/ft
Velocity	20.56	ft/s
Velocity Head	6.57	ft
Specific Energy	11.91	ft
Froude Number	0.00	
Maximum Discharg	495.90	cfs
Discharge Full	461.00	cfs
Slope Full	0.022000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

B-1

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.037000	ft/ft
Discharge	88.00	cfs

Results		
Depth	2.60	ft
Diameter	31	in
Flow Area	5.3	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	2.57	ft
Percent Full	100.0	%
Critical Slope	0.033586	ft/ft
Velocity	16.52	ft/s
Velocity Head	4.24	ft
Specific Energy	6.84	ft
Froude Number	0.00	
Maximum Discharg	94.66	cfs
Discharge Full	88.00	cfs
Slope Full	0.037000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

B-2

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.036000	ft/ft
Discharge	177.00	cfs

Results		
Depth	3.40	ft
Diameter	41	in
Flow Area	9.1	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	3.36	ft
Percent Full	100.0	%
Critical Slope	0.032839	ft/ft
Velocity	19.47	ft/s
Velocity Head	5.89	ft
Specific Energy	9.29	ft
Froude Number	0.00	
Maximum Discharg	190.40	cfs
Discharge Full	177.00	cfs
Slope Full	0.036000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

B-3

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.020000	ft/ft
Discharge	94.00	cfs

Results		
Depth	3.00	ft
Diameter	36	in
Flow Area	7.1	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	2.87	ft
Percent Full	100.0	%
Critical Slope	0.017383	ft/ft
Velocity	13.33	ft/s
Velocity Head	2.76	ft
Specific Energy	5.76	ft
Froude Number	0.00	
Maximum Discharg	101.12	cfs
Discharge Full	94.00	cfs
Slope Full	0.020000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

C 1

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	025000	ft/ft
Discharge	180.00	cfs

Results		
Depth	3.67	ft
Diameter	44	in → 48"
Flow Area	10.6	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	3.57	ft
Percent Full	100.0	%
Critical Slope	022177	ft/ft
Velocity	17.05	ft/s
Velocity Head	4.52	ft
Specific Energ	8.18	ft
Froude Numbe	0.00	
Maximum Disc	193.63	cfs
Discharge Full	180.00	cfs
Slope Full	025000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

C2

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	017000	ft/ft
Discharge	48.00	cfs

Results		
Depth	2.40	ft
Diameter	29	in — 30"
Flow Area	4.5	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	2.24	ft
Percent Full	100.0	%
Critical Slope	014695	ft/ft
Velocity	10.60	ft/s
Velocity Head	1.75	ft
Specific Energ	4.15	ft
Froude Numbe	0.00	
Maximum Disc	51.63	cfs
Discharge Full	48.00	cfs
Slope Full	017000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

C-3

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	016000	ft/ft
Discharge	338.00	cfs

Results		
Depth	5.05	ft
Diameter	61	in → 66"
Flow Area	20.0	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	4.81	ft
Percent Full	100.0	%
Critical Slope	013874	ft/ft
Velocity	16.89	ft/s
Velocity Head	4.43	ft
Specific Energ	9.48	ft
Froude Numbe	0.00	
Maximum Disc	363.59	cfs
Discharge Full	338.00	cfs
Slope Full	016000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

C 4

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	023000	ft/ft
Discharge	134.00	cfs

Results		
Depth	3.33	ft
Diameter	40	in → 48"
Flow Area	8.7	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	3.23	ft
Percent Full	100.0	%
Critical Slope	020219	ft/ft
Velocity	15.35	ft/s
Velocity Head	3.66	ft
Specific Energ	7.00	ft
Froude Numbe	0.00	
Maximum Disc	144.14	cfs
Discharge Full	134.00	cfs
Slope Full	023000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

D1

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	036000	ft/ft
Discharge	481.00	cfs

Results		
Depth	4.95	ft
Diameter	59	in
Flow Area	19.2	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	4.90	ft
Percent Full	100.0	%
Critical Slope	033156	ft/ft
Velocity	25.00	ft/s
Velocity Head	9.71	ft
Specific Energ	14.66	ft
Froude Numbe	0.00	
Maximum Disc	517.41	cfs
Discharge Full	481.00	cfs
Slope Full	036000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

D 2

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	030000	ft/ft
Discharge	622.00	cfs

Results		
Depth	5.64	ft
Diameter	68	in
Flow Area	25.0	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	5.57	ft
Percent Full	100.0	%
Critical Slope	027339	ft/ft
Velocity	24.89	ft/s
Velocity Head	9.63	ft
Specific Energ	15.27	ft
Froude Numbe	0.00	
Maximum Disc	669.09	cfs
Discharge Full	622.00	cfs
Slope Full	030000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

D 3

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	007000	ft/ft
Discharge	918.00	cfs

Results		
Depth	8.57	ft
Diameter	103	in
Flow Area	57.7	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	7.45	ft
Percent Full	100.0	%
Critical Slope	006391	ft/ft
Velocity	15.90	ft/s
Velocity Head	3.93	ft
Specific Energ	12.50	ft
Froude Numbe	0.00	
Maximum Disc	987.50	cfs
Discharge Full	918.00	cfs
Slope Full	007000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

D 4

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	025000	ft/ft
Discharge	291.00	cfs

Results		
Depth	4.39	ft
Diameter	53	in
Flow Area	15.1	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	4.29	ft
Percent Full	100.0	%
Critical Slope	022286	ft/ft
Velocity	19.23	ft/s
Velocity Head	5.75	ft
Specific Energ	10.14	ft
Froude Numbe	0.00	
Maximum Disc	313.03	cfs
Discharge Full	291.00	cfs
Slope Full	025000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

D5

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	017000	ft/ft
Discharge	74.00	cfs

Results		
Depth	2.82	ft
Diameter	34	in
Flow Area	6.3	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	2.65	ft
Percent Full	100.0	%
Critical Slope	014692	ft/ft
Velocity	11.82	ft/s
Velocity Head	2.17	ft
Specific Energ	4.99	ft
Froude Numbe	0.00	
Maximum Disc	79.60	cfs
Discharge Full	74.00	cfs
Slope Full	017000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

D-6

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.017000	ft/ft
Discharge	128.00	cfs

Results		
Depth	3.47	ft
Diameter	42	in
Flow Area	9.4	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	3.28	ft
Percent Full	100.0	%
Critical Slope	0.014709	ft/ft
Velocity	13.55	ft/s
Velocity Head	2.85	ft
Specific Energy	6.32	ft
Froude Number	0.00	
Maximum Discharg	137.69	cfs
Discharge Full	128.00	cfs
Slope Full	0.017000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

D-7

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.005000	ft/ft
Discharge	83.67	cfs

Results		
Depth	3.72	ft
Diameter	45	in → 48"
Flow Area	10.9	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	2.82	ft
Percent Full	100.0	%
Critical Slope	0.005854	ft/ft
Velocity	7.70	ft/s
Velocity Head	0.92	ft
Specific Energy	4.64	ft
Froude Number	0.00	
Maximum Discharg	90.00	cfs
Discharge Full	83.67	cfs
Slope Full	0.005000	ft/ft
Flow Type	N/A	

RBSDP-DMP
Worksheet for Circular Channel

E 1

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	028000	ft/ft
Discharge	563.00	cfs

Results		
Depth	5.50	ft
Diameter	66	in
Flow Area	23.8	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	5.42	ft
Percent Full	100.0	%
Critical Slope	025357	ft/ft
Velocity	23.66	ft/s
Velocity Head	8.70	ft
Specific Energ	14.20	ft
Froude Numbe	0.00	
Maximum Disc	605.62	cfs
Discharge Full	563.00	cfs
Slope Full	028000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

E2

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	025000	ft/ft
Discharge	652.00	cfs

Results		
Depth	5.94	ft
Diameter	71	in → 72"
Flow Area	27.7	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	5.83	ft
Percent Full	100.0	%
Critical Slope	022475	ft/ft
Velocity	23.52	ft/s
Velocity Head	8.60	ft
Specific Energ	14.54	ft
Froude Numbe	0.00	
Maximum Disc	701.36	cfs
Discharge Full	652.00	cfs
Slope Full	025000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

E3

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	015000	ft/ft
Discharge	652.00	cfs

Results		
Depth	6.54	ft
Diameter	78	in
Flow Area	33.6	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	6.24	ft
Percent Full	100.0	%
Critical Slope	013020	ft/ft
Velocity	19.42	ft/s
Velocity Head	5.86	ft
Specific Energ	12.40	ft
Froude Numbe	0.00	
Maximum Disc	701.36	cfs
Discharge Full	652.00	cfs
Slope Full	015000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

ES

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.005000	ft/ft
Discharge	254.00	cfs

Results		
Depth	5.64	ft
Diameter	68	in — 72"
Flow Area	25.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	4.42	ft
Percent Full	100.0	%
Critical Slope	0.005445	ft/ft
Velocity	10.16	ft/s
Velocity Head	1.61	ft
Specific Energy	7.25	ft
Froude Number	0.00	
Maximum Discharg	273.23	cfs
Discharge Full	254.00	cfs
Slope Full	0.005000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

E6

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Diamet

Input Data		
Mannings Coeffic	0.013	
Slope	032000	ft/ft
Discharge	254.00	cfs

Results		
Depth	3.98	ft
Diameter	48	in
Flow Area	12.5	ft²
Wetted Perime	12.57	ft
Top Width	0.00	ft
Critical Depth	3.92	ft
Percent Full	100.0	%
Critical Slope	029040	ft/ft
Velocity	20.39	ft/s
Velocity Head	6.46	ft
Specific Energ	10.44	ft
Froude Numbe	0.00	
Maximum Disc	273.23	cfs
Discharge Full	254.00	cfs
Slope Full	032000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

E 7

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.017000	ft/ft
Discharge	86.00	cfs

Results		
Depth	2.99	ft
Diameter	36	in
Flow Area	7.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	2.81	ft
Percent Full	100.0	%
Critical Slope	0.014695	ft/ft
Velocity	12.27	ft/s
Velocity Head	2.34	ft
Specific Energy	5.33	ft
Froude Number	0.00	
Maximum Discharg	92.51	cfs
Discharge Full	86.00	cfs
Slope Full	0.017000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

F-1

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.005000	ft/ft
Discharge	253.00	cfs

Results		
Depth	5.63	ft
Diameter	68	in - 72"
Flow Area	24.9	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	4.42	ft
Percent Full	100.0	%
Critical Slope	0.005447	ft/ft
Velocity	10.15	ft/s
Velocity Head	1.60	ft
Specific Energy	7.23	ft
Froude Number	0.00	
Maximum Discharg	272.15	cfs
Discharge Full	253.00	cfs
Slope Full	0.005000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

G 1

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.015000	ft/ft
Discharge	60.00	cfs

Results		
Depth	2.67	ft
Diameter	32	in
Flow Area	5.6	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Critical Depth	2.47	ft
Percent Full	100.0	%
Critical Slope	0.013000	ft/ft
Velocity	10.70	ft/s
Velocity Head	1.78	ft
Specific Energy	4.45	ft
Froude Number	0.00	
Maximum Discharg	64.54	cfs
Discharge Full	60.00	cfs
Slope Full	0.015000	ft/ft
Flow Type	N/A	

URS Greiner inc
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

RBSDP-DMP
Worksheet for Circular Channel

H - 1

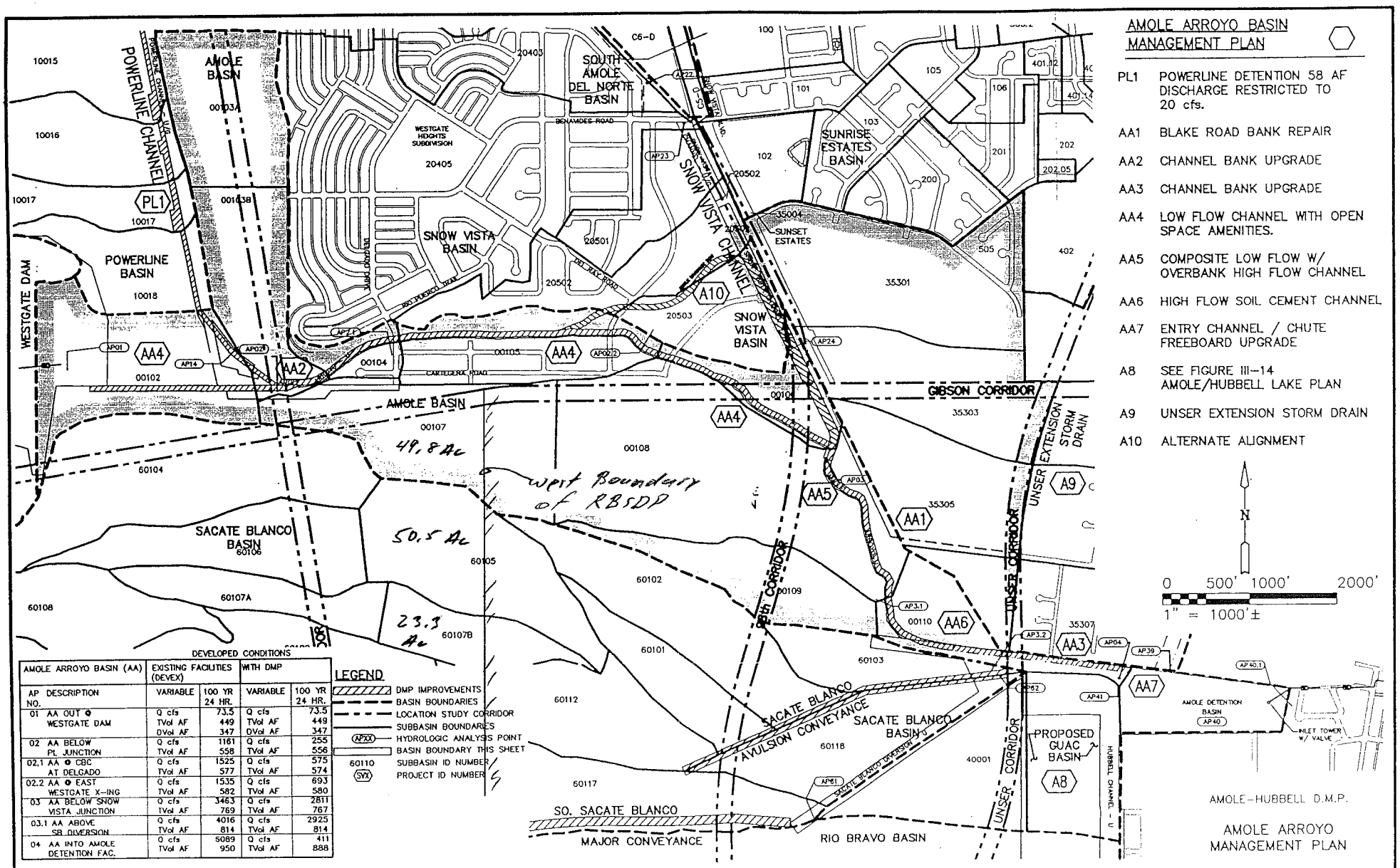
Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Diameter

Input Data		
Mannings Coefficient	0.013	
Slope	0.005000	ft/ft
Discharge	97.13	cfs

Results		
Depth	3.93	ft
Diameter	47	in → 48"
Flow Area	12.2	ft²
Wetted Perimeter	12.57	ft
Top Width	0.00	ft
Critical Depth	3.00	ft
Percent Full	100.0	%
Critical Slope	0.005794	ft/ft
Velocity	7.99	ft/s
Velocity Head	0.99	ft
Specific Energy	4.93	ft
Froude Number	0.00	
Maximum Discharg	104.48	cfs
Discharge Full	97.13	cfs
Slope Full	0.005000	ft/ft
Flow Type	N/A	

APPENDIX 8

TRUNCATED AH-DMP BASINS



DEVELOPED CONDITIONS

AMOLE ARROYO BASIN (AA)	EXISTING FACILITIES (DEVEX)		WITH DMP	
AP DESCRIPTION NO.	VARIABLE	100 YR 24 HR.	VARIABLE	100 YR 24 HR.
01 AA OUT @ WESTGATE DAM	Q cfs	73.5	Q cfs	73.5
	TVol AF	449	TVol AF	449
	DVol AF	347	DVol AF	347
02 AA BELOW PL JUNCTION	Q cfs	1161	Q cfs	255
	TVol AF	558	TVol AF	556
02.1 AA @ CBC AT DELGADO	Q cfs	1525	Q cfs	575
	TVol AF	577	TVol AF	574
02.2 AA @ EAST WESTGATE X-ING	Q cfs	1535	Q cfs	693
	TVol AF	582	TVol AF	580
03 AA BELOW SNOW VISTA JUNCTION	Q cfs	3463	Q cfs	2811
	TVol AF	769	TVol AF	767
03.1 AA ABOVE SB DIVERSION	Q cfs	4016	Q cfs	2925
	TVol AF	814	TVol AF	814
04 AA INTO AMOLE DETENTION FAC.	Q cfs	5089	Q cfs	411
	TVol AF	950	TVol AF	888

AMOLE-HUBBELL D.M.P.

AMOLE ARROYO MANAGEMENT PLAN

FIGURE NO. III-1

LEEDSHILL-HERKENHOFF, INC.

RIO BRAVO BASIN (RB)		EXISTING FACILITIES (DEVEX)		WITH DMP	
AP NO.	DESCRIPTION	VARIABLE	100 YR 24 HR.	VARIABLE	100 YR 24 HR.
43	RB CHANNEL @ HUBBELL CH.	Q cfs	1004	Q cfs	658
		TVol AF	43.5	TVol AF	141.6
76	SO. POWERLINE DIVERSION FROM POND 6	Q cfs	–	Q cfs	351
		TVol AF	–	TVol AF	78.4
		DVol AF	–	DVol AF	9.6
77	SO. POWERLINE DIVERSION FROM POND 8	Q cfs	–	Q cfs	56.4
		TVol AF	–	TVol AF	27.4
		DVol AF	–	DVol AF	19.0
44	SOUTH RB ARROYO @ HUBBELL LAKE	Q cfs	734	Q cfs	644
		TVol AF	48.8	TVol AF	45

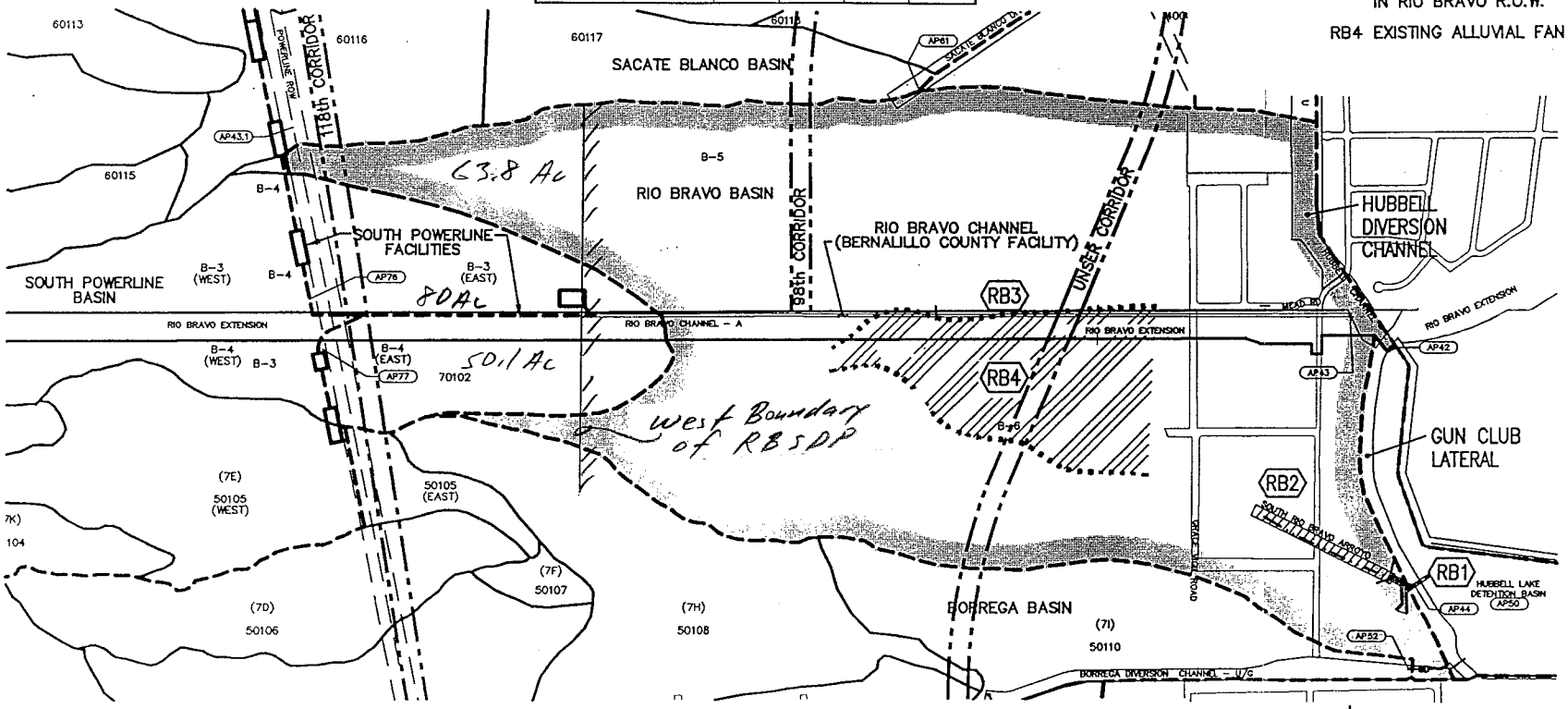
RIO BRAVO BASIN MANAGEMENT PLAN

RB1 SOUTH RIO BRAVO ARROYO 'Y' STRUCTURE INLET. SEE FIGURES III–10 & III–11

RB2 SOUTH RIO BRAVO ARROYO CONVEYANCE

RB3 CONCRETE LINED CHANNEL IN RIO BRAVO R.O.W.

RB4 EXISTING ALLUVIAL FAN



LEGEND

- DMP IMPROVEMENTS
- BASIN BOUNDARIES
- LOCATION STUDY CORRIDOR
- SUBBASIN BOUNDARIES
- (APXX) HYDROLOGIC ANALYSIS POINT
- BASIN BOUNDARY THIS SHEET
- 60110 SUBBASIN ID NUMBER
- (SVX) PROJECT ID NUMBER

0 500' 1000' 2000'

1" = 1000'±

N

AMOLE–HUBBELL D.M.P.

RIO BRAVO BASIN MANAGEMENT PLAN

LEEDSHILL–HERKENHOFF, INC.

FIGURE NO. III–9

I:\95043\95043_32\DWG\C\RB-BASIN.dwg 3-12-99 KHF

SACATE BLANCO BASIN (SB)		EXISTING FACILITIES (DEVEX)		WITH DMP	
AP NO.	DESCRIPTION	VARIABLE	100 YR 24 HR.	VARIABLE	100 YR 24 HR.
61	SB DIVERSION	Q cfs	1070	Q cfs	369
	@ HEAD	TVol AF	50.1	TVol AF	19.0
62	SB @ AMOLE ARROYO	Q cfs	2380	Q cfs	1183
		TVol AF	131	TVol AF	73.2

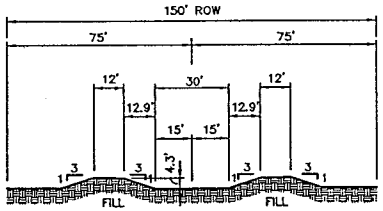
SACATE BLANCO BASIN MANAGEMENT PLAN

SB1 DIVERSION CHANNEL UPGRADE

SB2 SOUTH SACATE BLANCO ARROYO CONVEYANCE

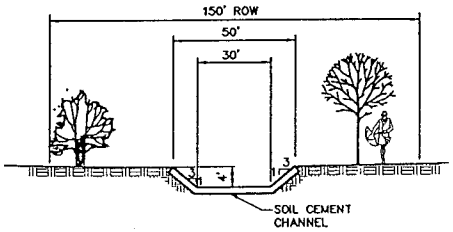
SB3 AVULSION CONVEYANCE

SB4 OPTIONAL DIRECT ENTRY TO GUAC BASIN



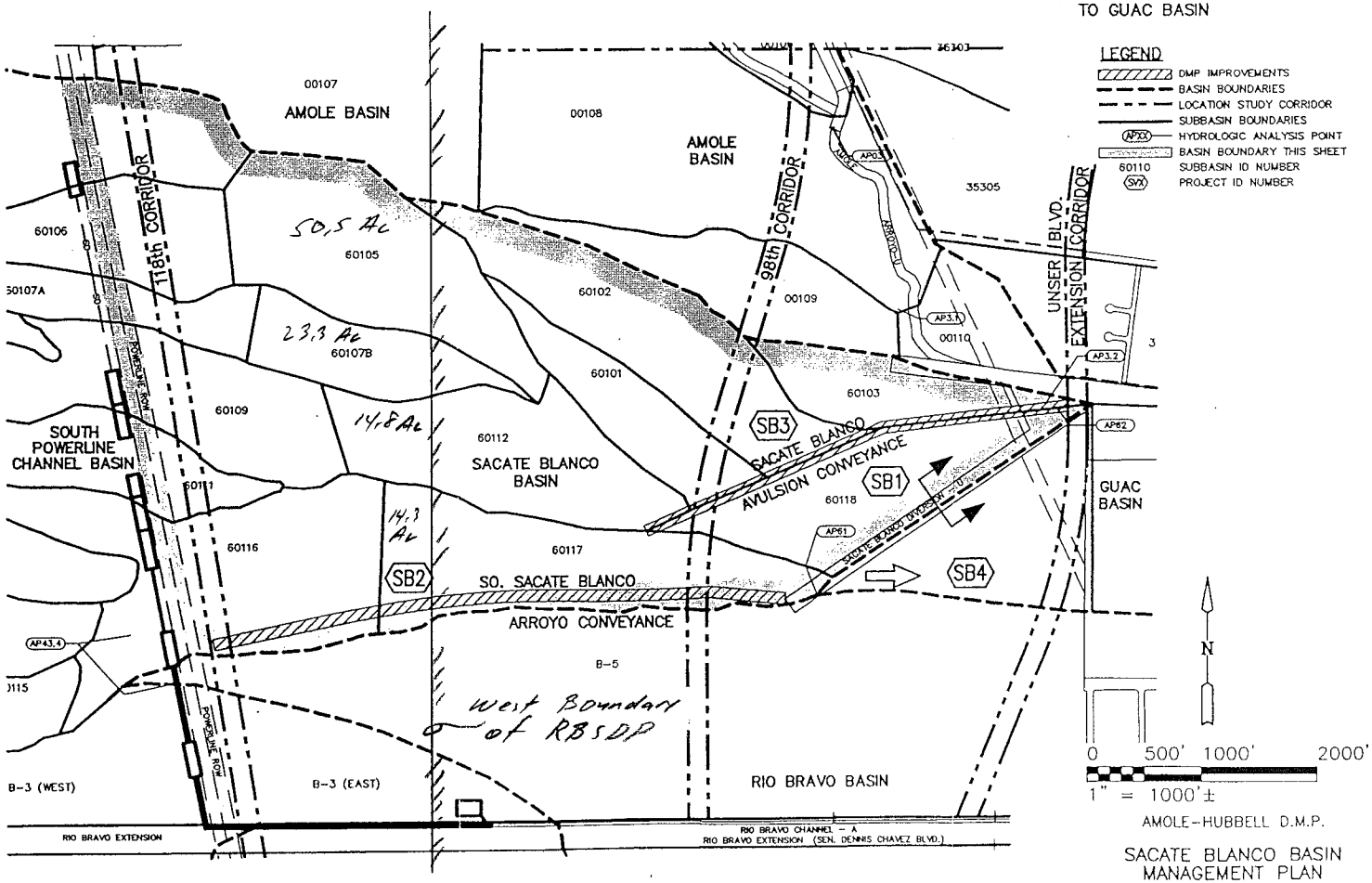
EXISTING SACATE BLANCO DIVERSION CHANNEL SECTION

SCALE: NO SCALE



PROPOSED SACATE BLANCO DIVERSION CHANNEL SECTION

SCALE: NO SCALE



AMOLE-HUBBELL D.M.P.

SACATE BLANCO BASIN MANAGEMENT PLAN

LEEDSHILL-HERKENHOFF, INC.

P:\95043\95043_32\DWG\C\SB-BAS

FIGURE NO. III-8

APPENDIX 9

EXCERPTS FROM RIO BRAVO SECTOR DEVELOPMENT PLAN AMENDMENT NO. 1

RIO BRAVO SECTOR DEVELOPMENT PLAN
AMENDMENT NO. 1
(SD-87-4)

Version 4.1

DECEMBER, 1999

City Case: **Z-99-58**
SPR-95-2-2
SD-87-4-1

County Case: _____ (courtesy)

Approved by E.P.C: **July 29, 1999**

Approved by City Council: _____

Plan Amendment Sponsors:

Curb, Inc.
attn: Mr. Bo K. Johnson, P.E.
Mr. Charles Haegelin
6301 Indian School Road, NE
Albuquerque, NM 87110
505-881-9190

and

American Southwest Homes
attn: Mr. L.L. (Nick) Bell
919 Salamanca, NW
Albuquerque, NM 87107
505-341-4640

Prepared By:

Community Sciences Corporation
attn: Mr. Cliff A. Spirock, AICP
Mr. Walter H. Nickerson, P.E.
Mr. Jon Swedenburg
Mr. Peter Arena
P.O.Box 1328
4481 Corrales Road
Corrales, NM 87048
505-897-0000

CSC Job No. 291-31-010

II. RIO BRAVO SECTOR PLAN AMENDMENT

D. Plan Revisions

4. Drainage and Reservations of Land / Easements

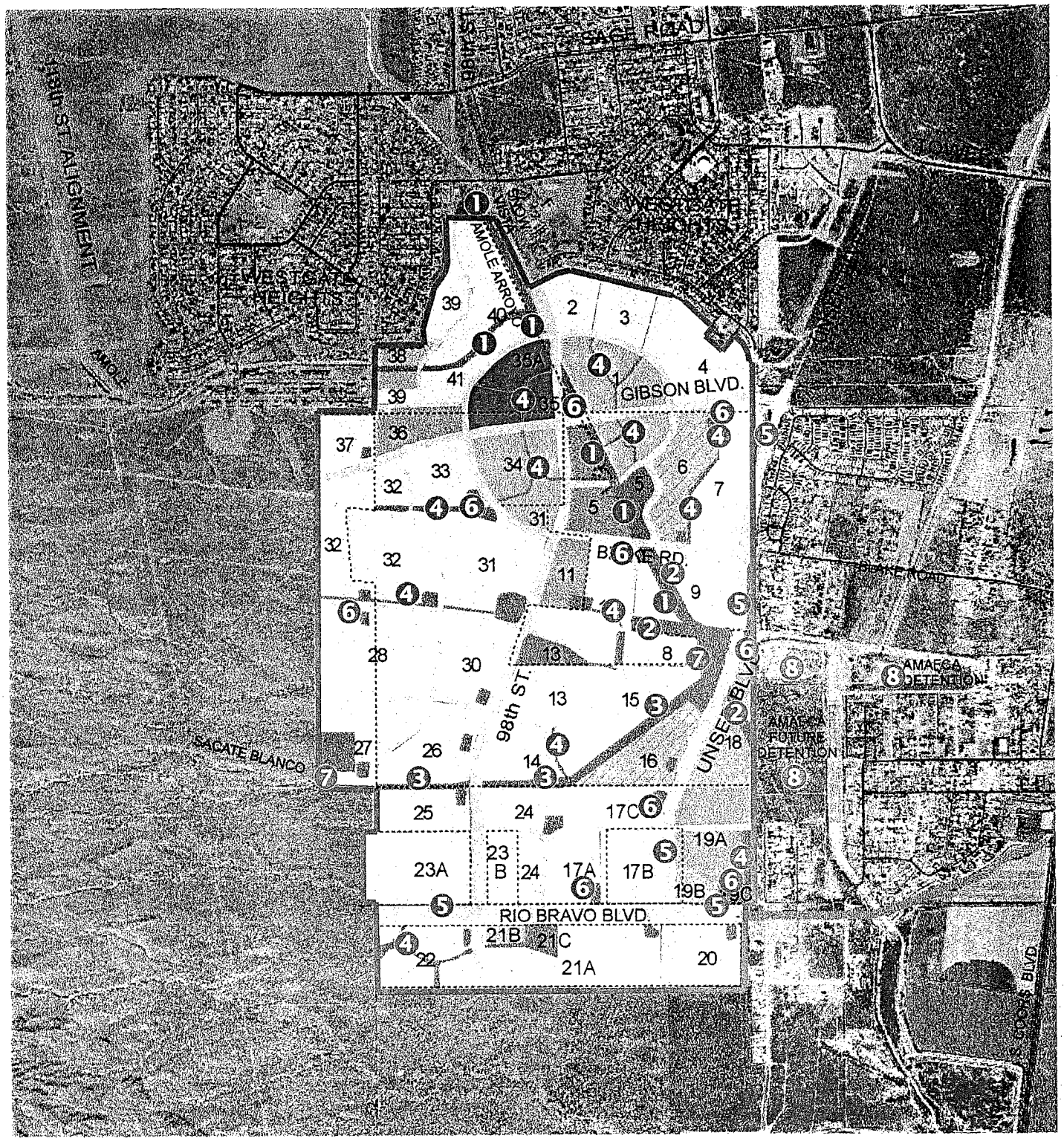
Major drainage for the Sector Development Plan area has been defined by AMAFCA with the "Amole-Hubbell Drainage Management Plan" (Final version July, 1999, Leedshill/Herkenhoff). This Plan has analyzed upstream watersheds and has arrived at public decision making for drainage treatment. Highlights of that Plan are:

- Extended detention facilities to the west, along the power lines adjacent to 118th Street.
- An alignment of the Amole Arroyo, semi-natural conditions between the existing power line detention facility and the Snow Vista Channel.
- An alignment for an improved arroyo treatment for the Amole Arroyo power line portion. This treatment is envisioned to be earth toned concrete or soil cement and is designed for high-velocity conditions.
- The owners have requested AMAFCA to consider the high velocity channel in consideration for adjacent easements to the Amole main branch. These considerations include easements adjacent to the AMAFCA channel right-of-way that would accommodate the open space, recreational trails and landscaping desired and adopted with the Amole Corridor Plan. The Sector Development Plan sponsors are willing to accommodate these provisions and will reserve the appropriate easement on the following bulk land plats.
- Major AMAFCA retention areas east of the Sector Development Plan area are proposed in the Drainage Management Plan. The City of Albuquerque, Parks and Open Space Division has suggested that these areas may be suitable for joint use with AMAFCA for recreational facilities. While this is beyond the control of the sponsors of the Sector Plan, the trail connections and land use arrangements envision this to be at least open space (AMAFCA detention) and if possible, recreational amenities included for community-scale facilities.
- The Secate Blanco Arroyo running west to east within the Sector Plan is envisioned to be an improved channel with an adjacent trail.
- The Rio Bravo Boulevard right-of-way corridor will contain a west east drainage conveyance north of the transportation elements, between the frontage road and the major roadway.
- It should be noted that a small portion of the Plan, immediately north of Rio Bravo Boulevard, is within the existing special flood hazard area of the FEMA flood plain. With the improvements to Rio Bravo, this flood plain can be eliminated by means of a Letter Of Map Revision utilizing the drainage plan for the roadway improvements together with the AMAFCA Drainage Management Plan. It is assumed that the public will initiate the modifications to the existing flood hazard area. Until such time as the removal of the flood plain (by the FEMA process) certain portions of the Plan near the intersection of Unser and Rio Bravo will require flood insurance. The land use arrangement has identified this area as commercial land use and parkland.

An updated master drainage report will be submitted to City Hydrology for their sign-off (prior to plats) which follows this revised Sector Plan. In addition to AMAFCA responsibilities, there are public facilities designed for storm drainage purposes within Unser. Also, it is anticipated that storm drain conduits will be required as part of the development process. These improvements will be discussed in the drainage report and the bulk land plat will reserve land areas for temporary easements for both surface conveyance and detention. This technique, used as part of the bulk land plat process, has been employed before to allow individual parcels to develop while awaiting approval of major infrastructure improvements for subsurface drainage.

The revised Rio Bravo Land Use Plan is anticipating a reserved area, west of Unser Boulevard to compliment the AMAFCA facilities. This is envisioned to be on-site detention for multiple parcels and will serve as a sedimentation basin, recreation area, and can be utilized as part of the trail and joint-use facilities adjacent to, and upstream from the major AMAFCA detention pond.

RIO BRAVO SECTOR PLAN - AMENDMENT NO. 1 - 1999

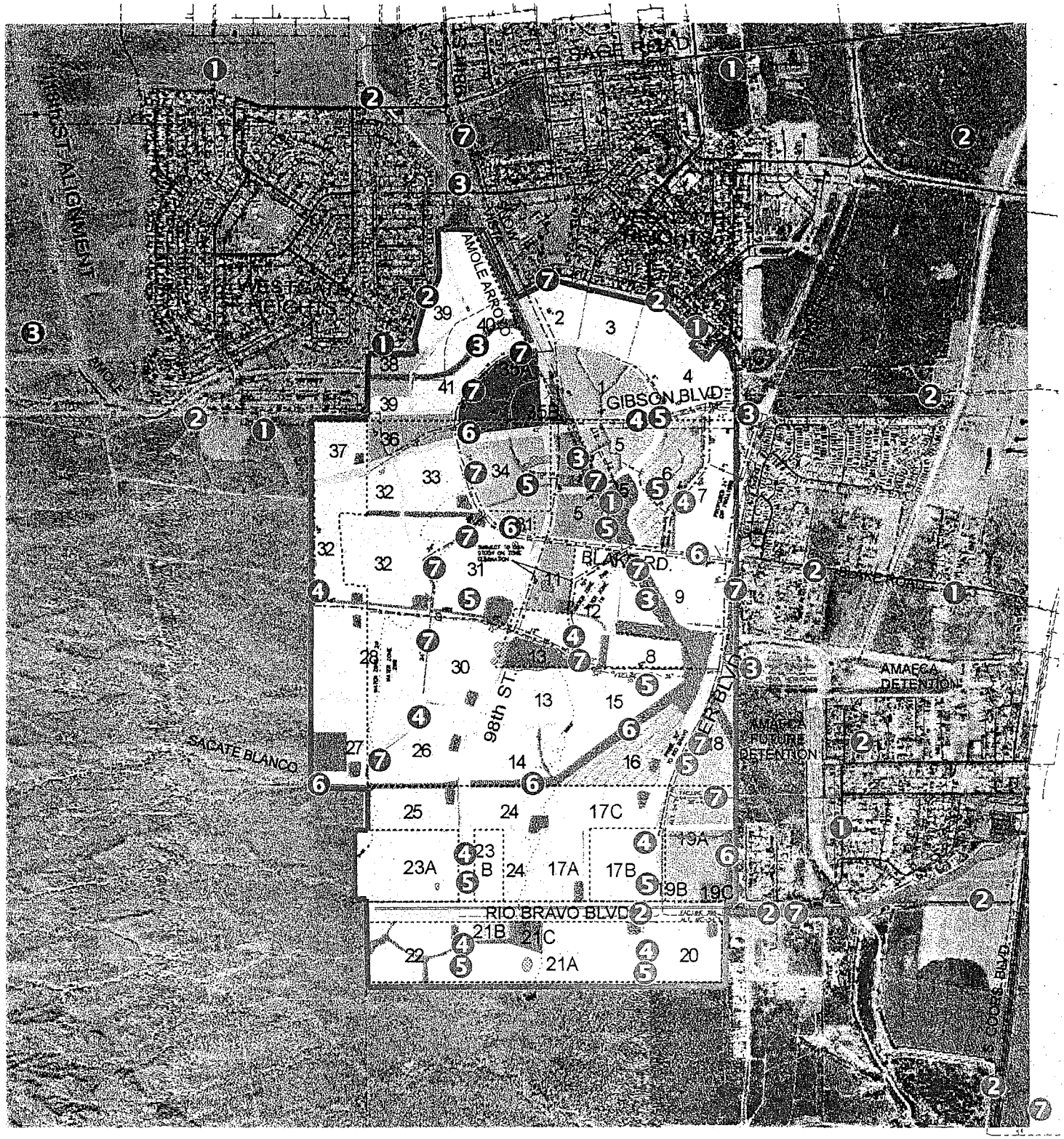


1. AMOLE ARROYO URBAN TRAIL
2. AMOLE ARROYO OPEN SPACE / NATURAL TRAIL
3. SACATE BLANCO URBAN TRAIL
4. NEIGHBORHOOD / CONNECTOR PEDWAY
5. ON STREET TRANSPORTATION TRAILS
6. SUGGESTIVE TRAIL / AMENITY NODE
7. SEDIMENT BASIN / RECREATION CONNECTION
8. AMAFCA DETENTION - POSSIBLE RECREATION USE

ILLUSTRATION 10

TRAILS AND PEDESTRIAN MOBILITY

RIO BRAVO SECTOR PLAN - AMENDMENT NO. 1 - 1999



1. EXISTING WATER (CITY G.I.S.)
2. EXISTING SANITARY SEWER (CITY G.I.S.)
3. EXISTING OR PROGRAMMED STORM FACILITY, AMAFCA OR CITY
4. PROPOSED (SCHEMATIC) S.D.P. WATER FACILITIES (CITY)
5. PROPOSED (SCHEMATIC) S.D.P. SANITARY FACILITIES (CITY)
6. PROPOSED (SCHEMATIC) S.D.P. STORM FACILITIES
7. CITY C.I.P. FACILITY (EXIST. S.D.P. OBLIGATION)

ILLUSTRATION 13

EXISTING & PROPOSED MAJOR UTILITIES

	PARCEL	ZONING PLAN AMEND.	EST. GROSS ACRES	EST. NET ACRES (4)	PROB. D.U.'s/ ACRE (4)	EST. TOTAL D.U.'s (4)	EST. S.F. UNITS (4)	EST. M.F. UNITS (4)	EST. FL. AREA RATIO (4)	PROB. GRS. FLR. AREA (4)	PROB. JOBS (5)
(1)	1	SU-1 as O-1	5.4	4.6					0.25	50,346	201
		SU-1 as R-2	13.4	10.7	20	215		215			
		SU-1 as C-2	8.1	6.9					0.22	66,005	132
	2	RLT	14.4	12.3	6	74	74				
	3	RLT	15.9	13.5	6	81	81				
	4	RLT	34.6	29.4	6	177	177				
(1)	5A	SU-1 as O-1	2.7	2.3					0.25	24,659	99
		SU-1 as R-2	6.8	5.8	20	115		115			
		SU-1 as C-2	4.1	3.5					0.22	33,454	134
(1a)	5B	SU-1 as R-2	12.2	10.3	20	207		207			
		SU-1 as R-T	12.2	10.3	8	83	83				
	5C	SU-1 as R-2	10.2	8.7	20	174		174			
		SU-1 as R-T	10.2	8.7	8	69	69				
	5	PARK	5.0	4.3							
(2)	6	SU-1 as RT	14.5	12.4	8	99	99				
		SU-1 as C-1	8.9	7.5					0.21	69,046	138
		SU-1 as O-1	6.1	5.2					0.25	56,511	226
	7	RLT	31.3	26.6	6	160	160				
	8	RLT	13.0	11.0	6	66	66				
	9	RLT	21.9	18.6	6	112	112				
	10	RLT	18.2	15.5	6	93	93				
	11	R-2	13.5	11.5	18	207		207			
	12	RLT	36.0	30.6	6	183	183				
	13B	RLT	27.0	22.9	6	138	138				
	13A	PARK	6.9	5.9							
	14	RLT	28.4	24.2	6	145	145				
	15	RLT	25.3	21.5	6	129	129				
(2)	16	SU-1 as C-1	10.1	8.6					0.21	78,540	157
		SU-1 as RT	16.8	14.2	8	114	114				
		SU-1 as O-1	6.7	5.7					0.25	61,648	247
	17	RLT	17.8	15.1	6	91	91				
	17A	RLT	21.0	17.8	6	107	107				
	17B	RLT	30.1	25.6	6	153	153				
	18	IP	22.5	19.2					0.30	250,292	626
(3)	19A	R-2/MH	14.2	12.1	18	217		217			
	19B	SU-1 as C-1	20.0	16.0					0.21	146,215	292
	19C	R-2/MH	6.7	5.7	18	102		102			
	20	RLT	17.5	14.9	6	89	89				
	21A	RLT	44.8	38.1	6	229	229				
	21B	SU-1 as C-1	4.8	4.1					0.21	37,112	74
	21C	PARK	6.9	5.8							
	22	RLT	31.4	26.7	6	160	160				
	23A	RLT	42.5	36.1	6	217	217				
	23B	RLT	15.2	12.9	6	78	78				
	24A	RLT	23.1	19.6	6	118	118				
	24B	RLT	9.3	7.9	6	48	48				
	25	RLT	22.1	18.8	6	113	113				
	26	RLT	35.5	30.2	6	181	181				
	27A	PARK/RLT	26.8	22.7	6	136	136				
	27B	RLT	11.5	9.8	6	59	59				
	28	RLT	34.4	29.2	6	175	175				
	29	RLT	33.0	28.0	6	168	168				
	30	RLT	36.7	31.2	6	187	187				
	31A	RLT	51.9	44.2	6	265	265				
(1)	31B	SU-1 as C-2	1.4	1.2					0.22	11,754	24
		SU-1 as R-2	2.4	2.1	20	42		42			
		SU-1 as O-1	1.0	0.8					0.25	9,247	37
	32(A-D)	RLT	58.3	49.5	6	297	297				
	33	RLT	20.1	17.1	6	102	102				
(1)	34	SU-1 as R-2	10.0	8.5	20	170		170			
		SU-1 as C-2	6.0	5.1					0.22	48,825	98
		SU-1 as O-1	4.0	3.4					0.25	36,989	148
	35A	C-2	27.5	23.4					0.22	224,235	448
	35B	C-2	3.6	3.0					0.22	28,934	58
	36	R-2	15.7	13.3	18	239		239			
	37	RLT	14.5	12.4	6	74	74				
(6)	38	PARK/RLT	14.2	12.1							
	39	RLT	13.9	11.8	6	71	71				
	40	RLT	24.6	20.9	6	126	126				
	41	RLT	27.0	22.9	6	138	138				
		TOTAL	1,289	1,090		6,791	5,105	1,818		1,233,814	3,138

NOTES:

(1): Designated as SU-1, mixed-use zones containing a maximum 30% C-2, minimum 50% R-2. Office (O-1) and institutional uses allowed.

(1a): Designated as SU-1, mixed-use zone containing both R-2 and R-T residential intensities.

(2): Designated as a SU-1, mixed-use zone containing a maximum 30% C-1 and a minimum 50% R-T. Office (O-1) and institutional uses allowed.

(3): Mobile homes allowed South of Sacate Blanco arroyo. R-2 zoning will permit Mobile Home Parks.

(4): The use of "Net Acres" and dwelling units "per acre", in this context, is for reasonable estimation of projected total units and does not imply a restriction on total allowed units on any site based on further reduction of parcel for collector, major and local roads, easements, drainage dedication and the like. Gross acreage usability calculations will be applied to any "DU per acre" restrictions or allowances.

(5): Projected jobs by land use type calculated using a gross square footage/employee factor of 500 for commercial, 250 for office related and 400 for industrial

(6): Park dedication per adjacent subdivisions. Any residual not dedicated is designated as RLT.

APPENDIX 10

BASIN TO OUTFLOW FACILITY TABLE

Rio Bravo Sector
Development Plan

Basin to Outflow Facility Table

Basin/Parcel	Outfall Facility	Comments
1, 2, 3, 4	NA	Per Drainage Report for El Rancho Grande I, Units 1 & 2 by DMG.
5a	Amole Arroyo	
5b	Amole Arroyo	
5c	C4	Flows through 6a
5d	C2	Flows through Basin 6b.
6a	C4	
6b	C2	
7a	C1	
7b	C3	
8	Amole Arroyo High Flow Section	
9a	Amole Arroyo Composite Section	
9b	C3	
10	D3	
11	D3	Flows through Basin 10
12	D2	
13	D2	
14	Secate Blanco	
15	Secate Blanco	
16	H1	
17	G1	If Guac Pond is not existing when Parcel 18 develops, a temporary outfall will be required to the existing Hubbell Channel.
18	Guac Pond	If Guac Pond is not existing when Parcel 18 develops, a temporary outfall will be required to the existing Hubbell Channel.
19	. Rio Bravo Channel	

Basin/Parcel	Outfall Facility	Comments
20a	Rio Bravo Channel	
20b	Borrega Dam	As per Borrega Dam study by Wilson & Co.
21	Borrega Dam	As per Borrega Dam study by Wilson & Co.
22	Borrega Dam	As per Borrega Dam study by Wilson & Co.
23, ZG1, ZG2, ASW1, ZG3, JM1, DL1, LP1, JM2, ASW2	Rio Bravo Channel	
24	Secate Blanco	
25	Secate Blanco	
26	Secate Blanco	
27a	E1	
27b	E7	
28a	E1	Through 29a, then south to E1
28b	E1	Flows through 29b.
29a	E1	
29b	E1	
30	E2	
31a	D2	
31b	D7	
32a	D1	
32b	D6	
32c	D5	
33	B1	
34	B3	
35	A3	
36	A2	
37	A2	
38	Amole Arroyo	
39a	Amole Arroyo	Flows through Parcel 40b.

Basin/Parcel	Outfall Facility	Comments
39b	Amole Arroyo	
40a	Snow Vista Channel	
40b	Amole Arroyo	
41a	Amole Arroyo	Street flow.
41b	Amole Arroyo	
Amole Basin 00105	Amole Arroyo	
Amole Basin 00107	A1	
Secate Blanco Basin 60105	D4	
Secate Blanco Basin 60107B	E6	
Secate Blanco Basin 60112	E6	
Secate Blanco Basin 60117	F1	
Rio Bravo Basin B-5	Rio Bravo Channel	
South Powerline Basin B-4 East	Rio Bravo Channel	

APPENDIX 11

EXCERPT FROM AMOLE-HUBBELL DMP
AMOLE ARROYO BASIN

PORTION OF "B, AMOLE ARROYO BASIN"

Therefore, runoff constraints were not considered feasible.

(4) Recommended Alternative

The Recommended baseline alternative is:

- ✧ 51 AF detention on Powerline and a low flow channel from Westgate Dam to Snow Vista confluence.
- ✧ Composite channel from Snow Vista to Sacate Blanco. Developed alignment could be in the existing AMAFCA "floating easement", in the RBSP alignment or other alignment. The routing is not critical for the conveyance and can be established at the time development occurs.
- ✧ High flow channel from Sacate Blanco to Amole Basin.

Alternative 2 and Alternative 5 illustrate the proposed alternative. This conveyance alternative provides the following advantages:

- ✧ Upper low flow channel and mid reach composite channel compatible with Corridor Plan.
- ✧ Consistent with RBSP land use (no detention at Snow Vista).
- ✧ Alignment within existing AMAFCA easement within RBSP alignment or other compatible alignment.

2. PROPOSED MANAGEMENT PLAN

The Baseline Alternative described above is the proposed Management Plan. This proposed management plan is schematically shown on Figure III-1 and the Alternative 2 and Alternative 5 Figure. The hydrologic results for the Amole Arroyo with the proposed plan in place are contained in Table III-2.

The proposed improvements are:

a. Limit Flows into the Amole Arroyo from Powerline Diversion

Powerline Detention: Construct an additional 58 acre feet of detention storage on the Powerline Channel with a Q_{100} discharge limit of 20 cfs at the Amole Arroyo confluence. See the Powerline Basin section for specifics.

Priority - High (required to implement DMP solution and to stabilize Amole Arroyo)

b. Channel Improvements

Upper Reach Low Flow Channel: Construct low flow channel with open space appurtenances from Westgate Dam to the Snow Vista confluence. This channel would be

designed to convey "clean" water discharges and use "naturalistic" construction in conformance with the Corridor Plan. Channel treatments to consider include meandering soil cement, concrete and riprap channel sections, silt traps, natural appearing drop structures, etc. A conceptual section of the low flow channel with recreational amenities is shown on Figure III-2 and on the Alternative drawings. If the low flow channel is assumed to be a trapezoidal section made of soil cement or concrete with 4:1 side slopes with the required freeboard, the approximate minimum bottom widths and channel depths to accommodate the predicted runoff are:

Westgate Dam to Powerline - 74 cfs - 5 ft. bottom (4' deep channel)
Powerline to Snow Vista - 575 to 693 cfs - 14 ft. bottom (4' deep channel)

Priority - High (required to implement DMP solution and stabilize Amole Arroyo)

Mid Reach Composite Channel: Construct composite channel from Snow Vista confluence to approximately Sacate Blanco. The proposed alignment is within the current AMAFCA "floating easement", or following the present alignment which is not within the floating easement, along the RBSP alignment or other alignment compatible with development. The composite channel consists of a low flow soil cement or tinted concrete "naturalistic" channel capable to conveying the 10-year runoff without overtopping. Less frequent higher flows would be conveyed in overbank areas as shallow low velocity flow. See conceptual section on Alternative Drawings 3 and 4 and on Figure III-2. The low flow portion is estimated to be approximately 4 feet deep with a 10 foot bottom width. The overbank flow area is approximately 70 feet wide with freeboard according to FEMA levee requirements. Freeboard is 3' with an additional 1' of freeboard required 100' before and after structures. Additional channel lining depth would also be required in curves, superelevations and conditions where back water conditions may be encountered.

Long term maintenance costs will be higher due to potential damage from storms greater than the 10-year frequency.

Priority - High

Lower Reach High Flow Channel: Construct a high flow soil cement or concrete channel from the Sacate Blanco confluence to the existing concrete channel transition at the inlet to Amole Dam. This trapezoidal channel is estimated to be 8 feet deep with a 30 foot bottom width. Naturalistic treatment could include exposed soil cement steps similar to the Callabacias Channel. This channel section is shown schematically on the Alternative drawings and on Figure III-2.

Priority - High.

Amole Rundown Upgrade: Construct additional freeboard for the existing rundown tr ion channel and chute. Provide additional freeboard using pinned curb or similar co. tion estimated to range from 0.5' to 1.4' high.

Priori ow (concurrent with upstream development).

Crossing tures: Numerous structures across the Amole Arroyo will require coordinatio for design and timing. These include major arterials such as Gibson, 98th and Unser as collector and local streets. Composite channels will require longer, and thus more costl sing structures.

The crossing struct sign must be consistent with the hydraulic concept for the arroyo

Priority - Concurrent w velopment

Tributary Conveyances wi e Amole Arroyo Basin must enter the proposed low flow channel via an underground c it or by an open channel connection which is consistent with the open space design a MAFCA approved. Improvement of these tributary conveyances should occur concu with development.

Priority - Low, (concurrent with Dev ent)

c. Interim Conditions

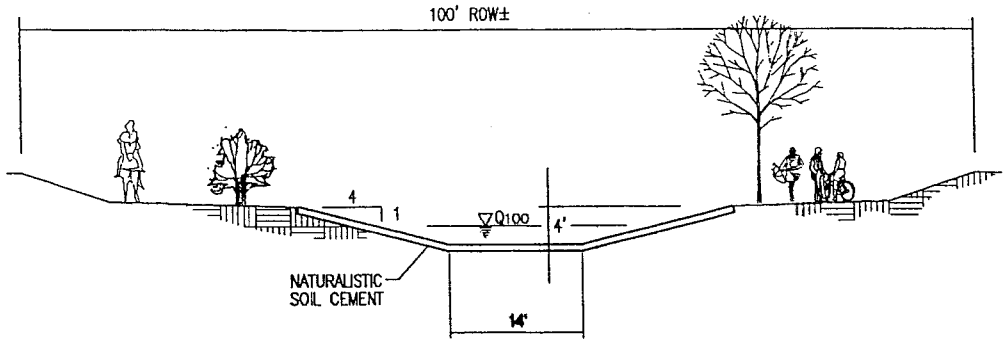
Interim Urgent Improvements: Three improve s to the Amole Arroyo were identified in the existing conditions analysis (Volume III) h need to be constructed as soon as possible.

- ✧ Blake Road Crossing: The dirt road crossing ke Road of the Amole Arroyo is a potential avulsion hazard. Regrading of Bl oad to prevent the flow from diverting down Blake Rd. is proposed. AMAF coordinating this work with Bernalillo County.

  Priority - Maintenance forces have corrected.

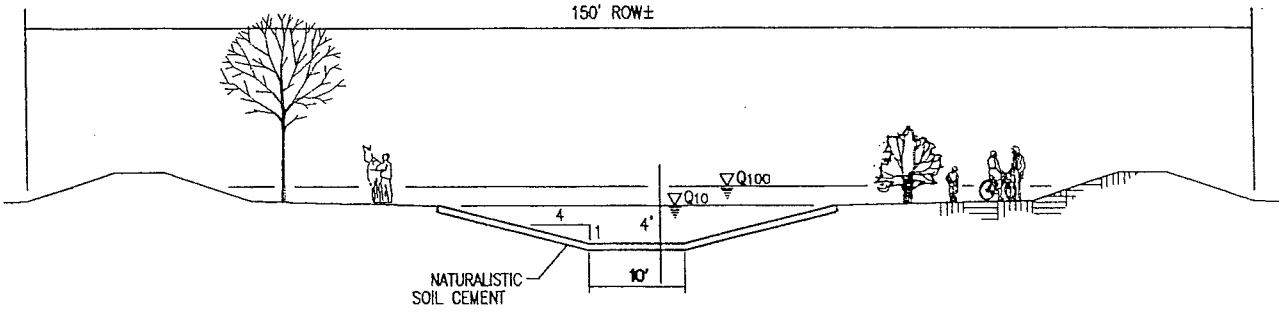
- ✧ Arroyo Channel Bank Height at Entrance to Detention Bas e north bank of the earthen Amole Arroyo just upstream from the entrance to Amole Detention Facility should be increased to safely convey the predicted exi conditions 100-year event and provide freeboard. Grading to accommodate lo noff must be incorporated.

  Priority - Maintenance forces have corrected.



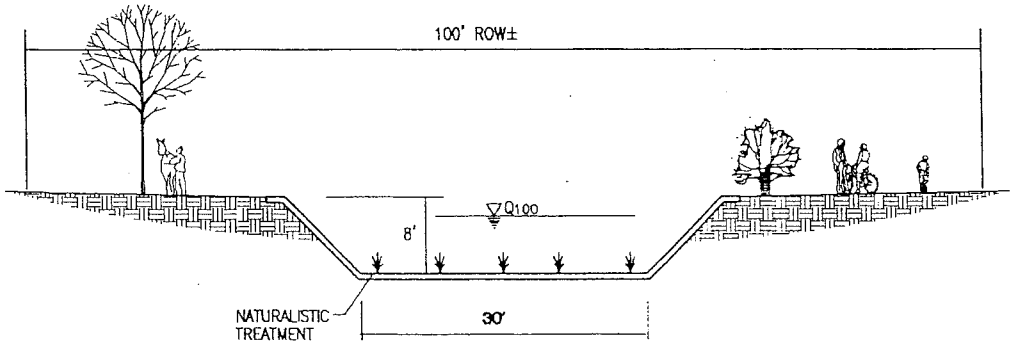
TYPICAL LOW FLOW SECTION AMOLE ARROYO

NOT TO SCALE



TYPICAL HIGH FLOW COMPOSITE SECTION AMOLE ARROYO

NOT TO SCALE



TYPICAL HIGH FLOW SECTION AMOLE ARROYO

NOT TO SCALE

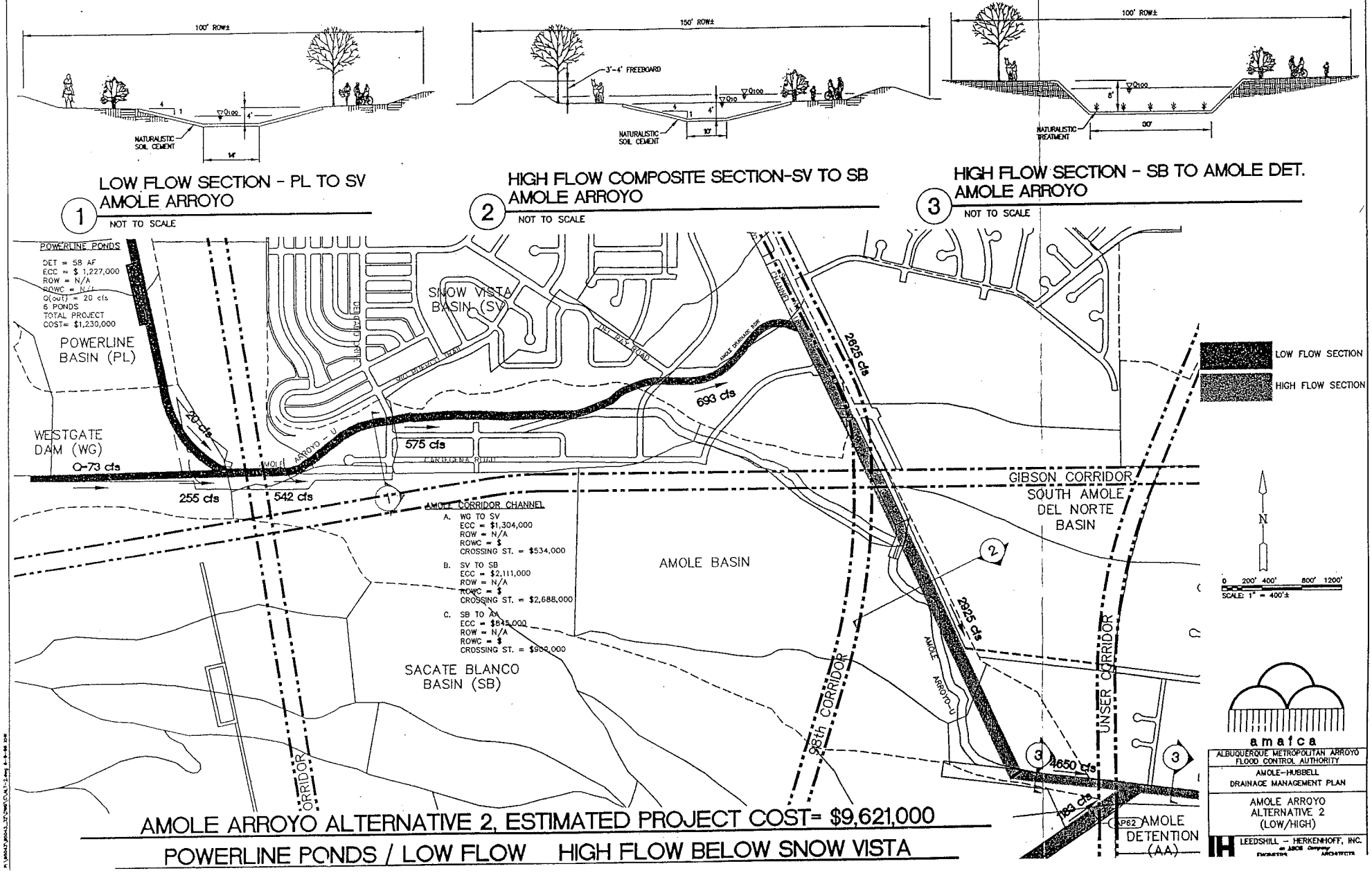
AMOLE–HUBBELL D.M.P.

AMOLE ARROYO
CHANNEL SECTIONS

LEEDSHILL–HERKENHOFF, INC.

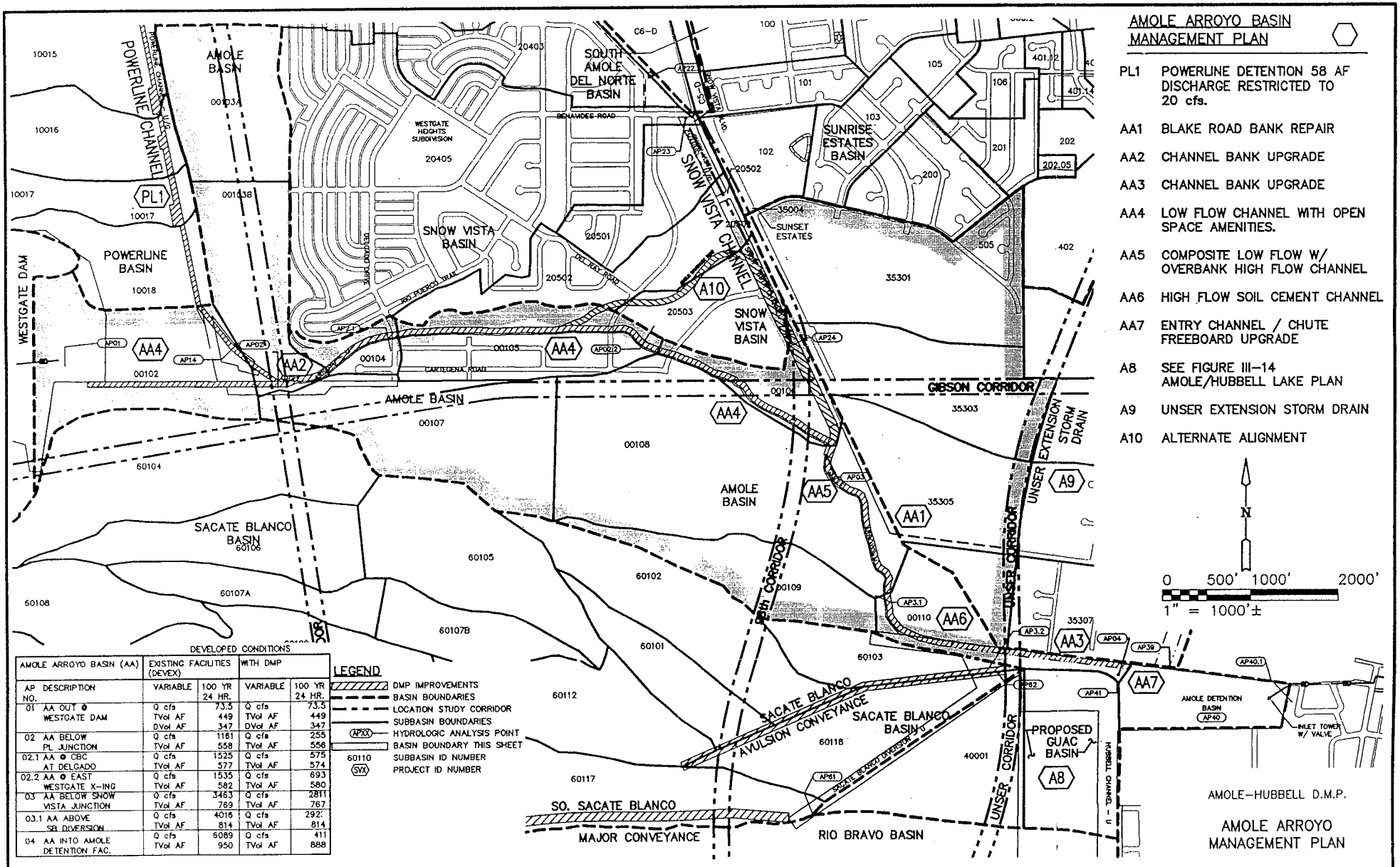
FIGURE NO. III–2

P:\95043\95043_32\DWG\C\LOWFL_ALT_1.dwg 6-9-93 HK



AMOLE ARROYO ALTERNATIVE 2, ESTIMATED PROJECT COST= $9,621,000

POWERLINE PONDS / LOW FLOW HIGH FLOW BELOW SNOW VISTA



LEEDSHILL-HERKENHOFF, INC.

I:\0404\0404.5\DWG\AM_BASIN.dwg 6-9-99 KHK

APPENDIX 12

EXCERPT FROM AMOLE-HUBBELL DMP SOUTH POWERLINE CHANNEL BASIN

PORTION OF "E. SOUTH POWERLINE CHANNEL BASIN"

2. PROPOSED MANAGEMENT PLAN

The proposed management plan is schematically shown on Figure III-7. The hydrologic and hydraulic results for the South Powerline Diversion Channel are contained in Table III-4.

The proposed improvements are:

a. South Powerline Channel/Detention Project SP-1

Sedimentation/Detention Basins: To capture the sediment generated from the escarpment, detention/sedimentation ponds with diversion berms are placed at existing arroyos along the powerline ROW. These locations cut off the sediment source from downstream alluvial fans and avulsions. The ponds are connected in series by conveyance systems. Detention/ sedimentation ponds will attenuate the peak runoff thereby reducing the size of conveyance systems required. This DMP facility has nine (9) ponds in the hydrologic model to achieve the required detention. Ponds one through six are located north of Rio Bravo and ponds seven and eight are located south of Rio Bravo. Pond nine is to detain the local runoff from subbasin B-3 east. A total of 71 AF of detention volume is required based on the analysis of this DMP. Sediment volume is inherent in the bulked volumes from the AHYMO analysis for fully developed conditions. A detailed hydrologic, hydraulic, sediment and runoff volume analysis will be required for design.

Priority - Low, (required by development)

South Powerline Channel Conveyance System: Each pond will be connected to the next by a conveyance system. Conveyance systems range from pipe to an open channel with a diversion berm. From pond one, a 24" pipe is modeled to convey the flow to pond two. Then, open channels are used between ponds two through six. The major avulsion located along the Rio Bravo/Borrega basin boundary is the location for ponds seven and eight. These two ponds will be used in capturing the flows at the avulsion. Since the two ponds are down gradient from the pond six outfall, flows from ponds seven and eight are collected and conveyed to a junction point with the pond six outfall. The combined flows are then piped to the Rio Bravo channel head for conveyance to the Amole/Hubbell system. Pond nine is modeled for the 80 acre local drainage area (Area B-3 East) at the Rio Bravo channel head. Pond nine is a local pond and to be constructed when needed by development.

Priority - Low, (required by development)

b. Land Use Issues

Runoff Constraints: Due to the capacity of the proposed South Powerline system to accommodate the runoff from the basin, constraining runoff from the South Powerline Basin is not proposed.

Priority - N/A

Southwest Area Plan: The Southwest Area Plan proposes an open space easement approximately 500-foot wide along the escarpment. Also, the Southwest Area Plan proposes a restriction on development of areas with slopes greater than 9 percent. These restrictions are intended to preserve the escarpment area and to reduce the impacts of development in the escarpment area. These restrictions are included in the DMP analysis.

Priority - N/A

PNM and Plains Electric Easements: The intent of this DMP is to construct a diversion channel with sediment and detention basins along the existing powerline easement. Coordination with PNM and Plains Electric to use part of the existing easement and additional ROW or easement are required. This location for the diversion works well, due to the existing powerline easement which forms a development boundary.

Priority - N/A

c. Crossing Structures

Local residential crossing structures are not considered in the cost estimate. Rio Bravo (Sen. Dennis Chavez Blvd.) and 118th Street Corridors cross the proposed South Powerline Channel, but were assumed to cross over pipe outfall structures and not open channels, so crossing structures are not considered in the cost estimate.

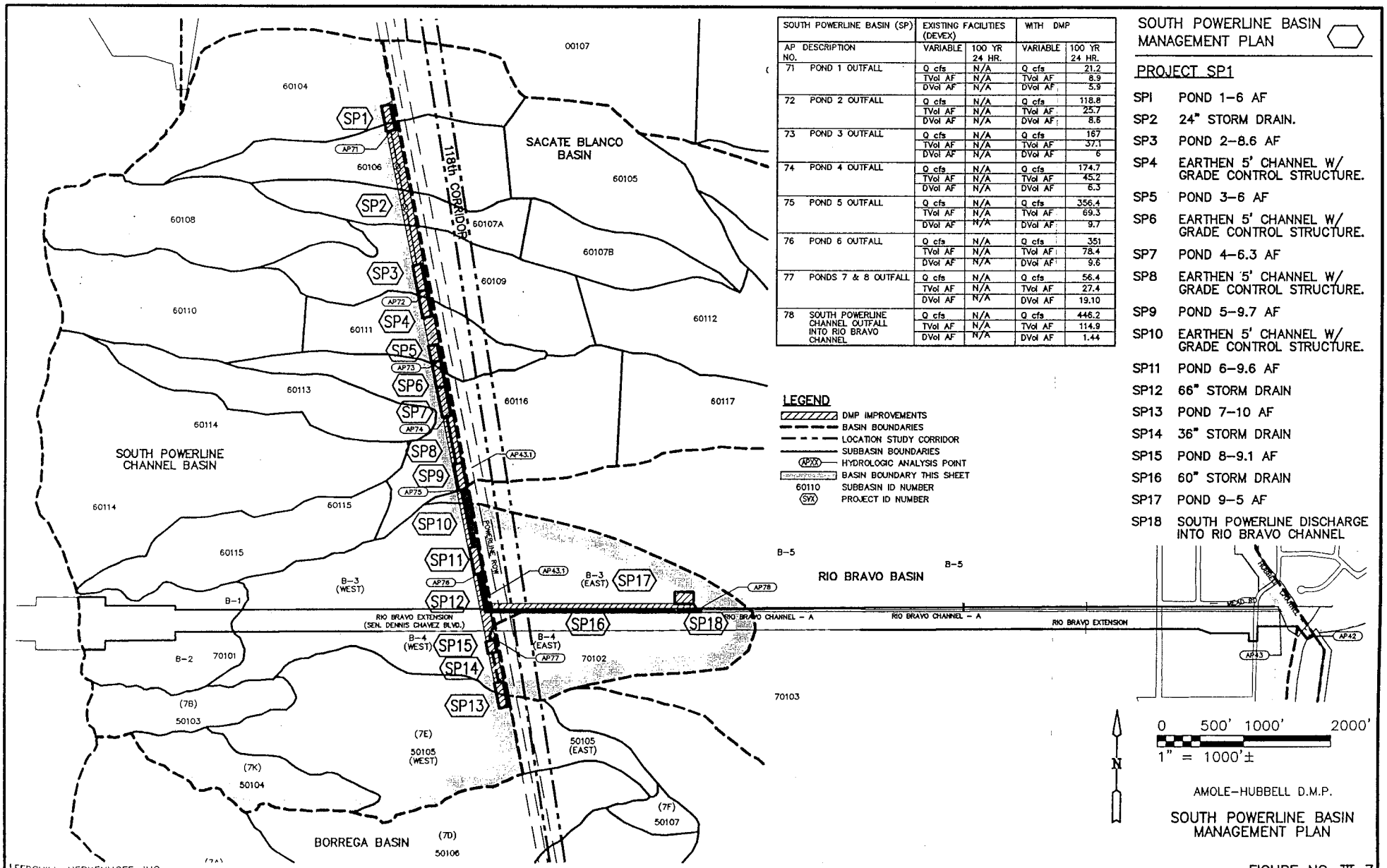
d. Budget

Budget Estimate: The estimated project cost of the planned drainage facilities are:

Detention/Sedimentation ponds - $ 950,000
Conveyance Systems - $ 220,000
Right-of-Way - $ 620,000 (Assumes purchase required.)
Crossing Structures - N/A

Timing: These facilities are not required today since the drainage area below the diversion is currently undeveloped. These facilities will become necessary as development, either to the west or to the east of the powerline, occurs.

Right-of-Way: AMAFCA may consider acquiring Right-of-Way for these planned facilities in the near future if economically feasible. The Right-of-Way would be used to supplement agreements that can be reached with proposed development or with PNM and Plains Electric for the use of their existing easement.



SOUTH POWERLINE BASIN (SP)		EXISTING FACILITIES (DEVEX)		WITH DMP	
AP NO.	DESCRIPTION	VARIABLE	100 YR 24 HR.	VARIABLE	100 YR 24 HR.
71	POND 1 OUTFALL	Q cfs	N/A	Q cfs	21.2
		TVol AF	N/A	TVol AF	8.9
		DVol AF	N/A	DVol AF	5.9
72	POND 2 OUTFALL	Q cfs	N/A	Q cfs	118.8
		TVol AF	N/A	TVol AF	25.7
		DVol AF	N/A	DVol AF	8.8
73	POND 3 OUTFALL	Q cfs	N/A	Q cfs	167
		TVol AF	N/A	TVol AF	37.1
		DVol AF	N/A	DVol AF	6
74	POND 4 OUTFALL	Q cfs	N/A	Q cfs	174.7
		TVol AF	N/A	TVol AF	45.2
		DVol AF	N/A	DVol AF	6.3
75	POND 5 OUTFALL	Q cfs	N/A	Q cfs	356.4
		TVol AF	N/A	TVol AF	69.3
		DVol AF	N/A	DVol AF	9.7
76	POND 6 OUTFALL	Q cfs	N/A	Q cfs	351
		TVol AF	N/A	TVol AF	78.4
		DVol AF	N/A	DVol AF	9.6
77	PONDS 7 & 8 OUTFALL	Q cfs	N/A	Q cfs	56.4
		TVol AF	N/A	TVol AF	27.4
		DVol AF	N/A	DVol AF	19.10
78	SOUTH POWERLINE CHANNEL OUTFALL INTO RIO BRAVO CHANNEL	Q cfs	N/A	Q cfs	446.2
		TVol AF	N/A	TVol AF	114.9
		DVol AF	N/A	DVol AF	1.44

LEGEND

- DMP IMPROVEMENTS
- BASIN BOUNDARIES
- LOCATION STUDY CORRIDOR
- SUBBASIN BOUNDARIES
- (APXX) HYDROLOGIC ANALYSIS POINT
- BASIN BOUNDARY THIS SHEET
- 60110 SUBBASIN ID NUMBER
- (SYX) PROJECT ID NUMBER

SOUTH POWERLINE BASIN MANAGEMENT PLAN

PROJECT SP1

SP1	POND 1–6 AF
SP2	24" STORM DRAIN.
SP3	POND 2–8.6 AF
SP4	EARTHEN 5' CHANNEL W/ GRADE CONTROL STRUCTURE.
SP5	POND 3–6 AF
SP6	EARTHEN 5' CHANNEL W/ GRADE CONTROL STRUCTURE.
SP7	POND 4–6.3 AF
SP8	EARTHEN 5' CHANNEL W/ GRADE CONTROL STRUCTURE.
SP9	POND 5–9.7 AF
SP10	EARTHEN 5' CHANNEL W/ GRADE CONTROL STRUCTURE.
SP11	POND 6–9.6 AF
SP12	66" STORM DRAIN
SP13	POND 7–10 AF
SP14	36" STORM DRAIN
SP15	POND 8–9.1 AF
SP16	60" STORM DRAIN
SP17	POND 9–5 AF
SP18	SOUTH POWERLINE DISCHARGE INTO RIO BRAVO CHANNEL

AMOLE–HUBBELL D.M.P.

SOUTH POWERLINE BASIN MANAGEMENT PLAN

LEEDSHILL–HERKENHOFF, INC.

P:\9504\9504_32\DWG\C\SP-BASIN.dwg 3-16-99 KHK

FIGURE NO. III–7

APPENDIX 13

EXCERPT FROM AMOLE-HUBBELL DMP SECATE BLANCO BASIN

PORTION OF "F. SACATE BLANCO BASIN"

2. PROPOSED MANAGEMENT PLAN

The proposed Drainage Management Plan is schematically shown on Figure III-8. The hydrologic results for the Sacate Blanco Basin with the proposed plan in place are contained in Table III-5.

a. Sacate Blanco Diversion Channel Project SB1

Stabilize the channel to convey the "clean" water runoff to the convergence with the Amole Arroyo. See proposed channel section on Figure III-8.

Priority - Low - Development driven.

b. South Sacate Blanco Arroyo Project SB2

Conveys the runoff generated in the Sacate Blanco Basin to the diversion channel. This arroyo, shown on Figure III-8, is one main conveyance system of the basin. Since this arroyo is required to convey flows to the diversion, a flow path for the runoff must be maintained. This arroyo could be lined, placed in a storm drain, or otherwise stabilized, depending on future development. No recommendations are made about channel improvements as a result of this DMP. This DMP identifies the need for maintaining the existing facility as part of the Sacate Blanco Basin backbone conveyance system.

c. Sacate Blanco Avulsion Conveyance Project SB3

The existing drainage divide just upstream from the Diversion Channel is the result of an avulsion down an unimproved road. The DMP hydrology assumes this drainage divide remains. This conveyance is shown on Figure III-8. This conveyance could be street flow, storm drain or channel flow or a combination depending on future development. This DMP identifies the need for maintaining the existing facility as part of the Sacate Blanco Basin backbone conveyance system.

d. Avulsion Control

The South Powerline Diversion will cut off the sediment sources west of the powerline and allow local control of avulsions east of the powerline as development occurs. (See Sediment Reconnaissance Mapping in Volume II and Sediment Reconnaissance Report in Volume III for discussion of detailed avulsion potential.)

The avulsion plan:

- ✧ Construct the South Powerline Diversion prior to significant development within the Sacate Blanco, Rio Bravo or northern Borrega Basins.
- ✧ Design conveyance facilities through developed properties to accommodate the worst case combination of uncontrolled upstream avulsions.

- ✧ Control potential avulsions within the development in a stable manner to eliminate the avulsion potential.

e. Land Use Issues

Runoff Constraints: Due to the diversion by the South Powerline Channel facility and the proposed improvements to the Sacate Blanco Diversion to accommodate "clean water" runoff from the west, constraining runoff within the Sacate Blanco Basin is not proposed.

Priority - N/A

f. Crossing Structures

The Albuquerque Urban Area Long Range Major Street Plan (9/99) shows corridors for 98th and 118th Streets and Unser Blvd. in the Sacate Blanco Basin. (See Figure III-8.) The Unser crossing was assumed to be located downstream of the confluence of the Sacate Blanco Diversion and the Amole Arroyo. The estimated cost for that crossing structure is included in the Amole Arroyo estimate (AA-6). The 98th Street crosses both the Sacate Blanco Avulsion Conveyance (SB2). 118th Street crosses the South Sacate Blanco Arroyo Conveyance near the west end.

g. Budget

Budget Estimate: The estimated project budget for the proposed facilities is:

Sacate Blanco Diversion Channel Improvements - $460,000
South Sacate Blanco Arroyo Conveyance - $785,000
Sacate Blanco Avulsion Conveyance - $628,000
Crossing Structures -
- Sacate Blanco Diversion Channel Improvements - no crossing
- South Sacate Blanco Arroyo Conveyance - $1,003,200
- Sacate Blanco Avulsion Conveyance - $591,360

Timing: Conveyance improvements along the Sacate Blanco Diversion are required when development occurs.

TABLE III-5
HYDROLOGIC SUMMARY
SACATE BLANCO BASIN

AP NO.	MAP NO.	DESCRIPTION	VARIABLE	EXISTING FACILITIES			PROPOSED DMP FACILITIES	
				EXISTING	DEVEX	EXISTING CAPACITY	DMP	FUTURE CAPACITY
61	7	SACATE BLANCO DIVERSION AT HEAD	Q (cfs)	492	1070	853	369	853
			Tvol (AF)	16.9	50.1	(1660 cfs	19	
			Runoff (in)	0.53	1.58	bank full)	1.86	
			cfs/ac	1.29	2.81		3.03	
62	7	SACATE BLANCO BASIN AT ENTRANCE TO AMOLE ARROYO	Q (cfs)	901	2380	853	1183	1190
			Tvol (AF)	43.4	131	(1660 cfs	73.2	
			Runoff (in)	0.53	1.61	bank full)	1.83	
			cfs/ac	0.92	2.43		2.47	

Notes/Legend

AP - Analysis Point - See Figures this report, maps in Volume II and detail hydrology in Volume III.
Q - Peak discharge rate
Tvol - Total runoff volume
Dvol - Maximum detained volume
Runoff - inches of runoff
cfs/ac - peak discharge rate per acre of contributing area.
Existing - Existing land use and existing drainage facilities.
DEVEX - Fully developed land use and existing drainage facilities.
Capacity - Design capacity.
DMP - Proposed improvements in place, fully developed land use.

SACATE BLANCO BASIN (SB)	EXISTING FACILITIES (DEVEX)		WITH DMP	
AP NO.	DESCRIPTION	VARIABLE	100 YR 24 HR.	VARIABLE	100 YR 24 HR.
61	SB DIVERSION @ HEAD	Q cfs	1070	Q cfs	369
		TVol AF	50.1	TVol AF	19.0
62	SB @ AMOLE ARROYO	Q cfs	2380	Q cfs	1183
		TVol AF	131	TVol AF	73.2

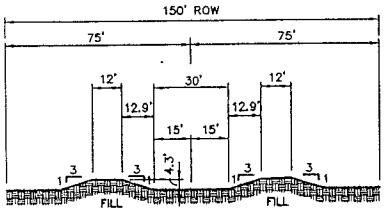
SACATE BLANCO BASIN MANAGEMENT PLAN

SB1 DIVERSION CHANNEL UPGRADE

SB2 SOUTH SACATE BLANCO ARROYO CONVEYANCE

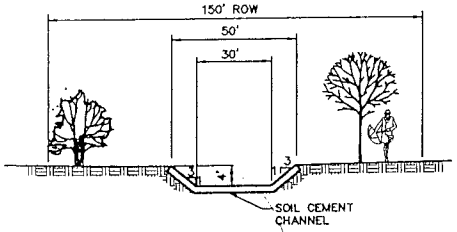
SB3 AVULSION CONVEYANCE

SB4 OPTIONAL DIRECT ENTRY TO GUAC BASIN



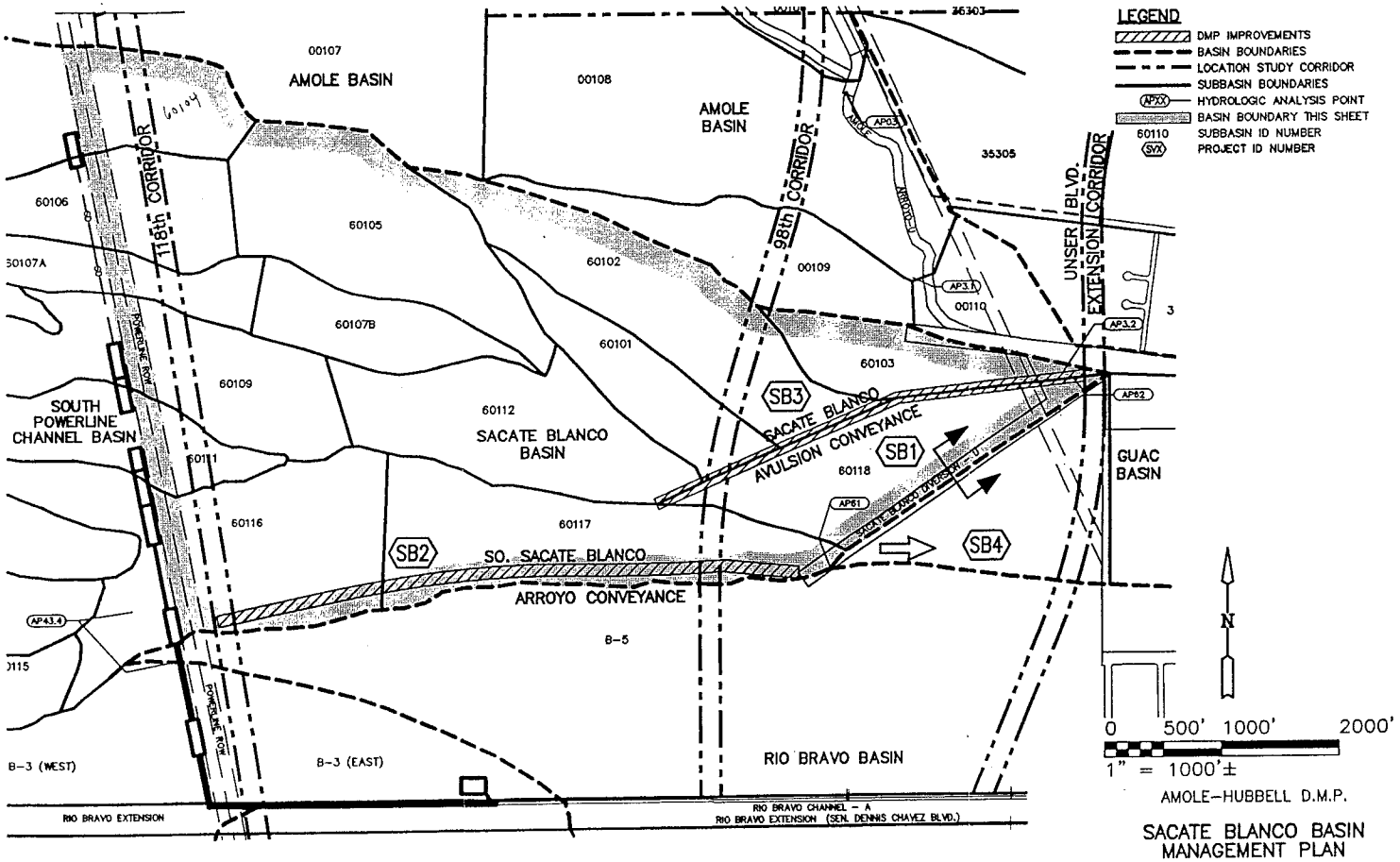
EXISTING SACATE BLANCO DIVERSION CHANNEL SECTION

SCALE: NO SCALE



PROPOSED SACATE BLANCO DIVERSION CHANNEL SECTION

SCALE: NO SCALE



AMOLE-HUBBELL D.M.P.

SACATE BLANCO BASIN MANAGEMENT PLAN

FIGURE NO. III-8

LEEDSHILL-HERKENHOFF, INC.

APPENDIX 14

EXCERPT FROM AMOLE-HUBBELL DMP RIO BRAVO BASIN

PORTION OF "G. RIO BRAVO BASIN"

South Rio Bravo Arroyo: The critical location for this arroyo is where the flow from the mesa is conveyed over the lower bench, across the MRGCD Gun Club Lateral and into the Hubbell Lake Detention. The vertical drop from the top of the mesa to Hubbell Lake is approximately 45 feet. This area has head cut back into the mesa, the culvert at the Gun Club Lateral is undersized and flows in the arroyo endanger the Lateral. A stable rundown from the mesa into Hubbell Lake crossing the lateral appears to be the most practical alternative, as shown in Figures III-10 and III-11. This facility is incorporated into the DMP solution. Design and construction of this crossing structure must be coordinated with MRGCD and allow maintenance access for Gun Club lateral. Combining the South Rio Bravo Arroyo with overflow from the Borrega Inlet has been considered. See the Borrega Basin section for further discussions.

AHYMO Analysis: The Developed Conditions AHYMO model was modified to represent the proposed "South Powerline Diversion" with detention facilities and outflows restricted to the capacity of the Rio Bravo Channel. Idealized conceptual basins were inserted into the model to represent the proposed management plan. A more detailed AHYMO analysis will be required once specific detention basin parameters are established during design of these facilities.

2. PROPOSED MANAGEMENT PLAN

The proposed management plan is schematically shown on Figure III-9. The hydrologic results for the Rio Bravo Basin with the proposed plan in place are contained in Table III-6.

a. South Rio Bravo Entrance into Hubbell Lake - Project RB1

Without a facility to safely convey the design storm from the South Rio Bravo Arroyo to Hubbell Lake, uncontrolled erosion, failure of the MRGCD Gun Club lateral, and possible flooding may occur in this area. To accommodate the runoff, facilities and improvements will be required. These facilities include a conveyance system through the existing developments, a rundown through the mesa escarpment, and a crossing structure over the MRGCD Gun Club Lateral. The conveyance system could be an open channel or a storm drain. Since no ROW exists, AMAFCA or other public agency may consider the purchase of ROW for an alignment that best suits this need. The conveyance system will require a diked inlet to capture the sheet flow runoff from the alluvial fan located upstream. The point of discharge from the conveyance system would be the mesa head cut. With improvements, the head cut could be transformed into a stable channel that conveys the flow in a non-erosive manner to the crossing structure. The crossing structure, designed to provide access for the existing maintenance road, would allow safe and controlled discharge into Hubbell Lake. (See Figures III-10 and III-11.)

Priority - Medium (Although this improvement does not directly impact the AMAFCA Hubbell Lake facility, the medium priority is assigned due to the continued erosion and the danger to the MRGCD Gun Club Lateral.)

b. Rio Bravo Channel

Construction of the Rio Bravo Channel is programmed to be constructed concurrently with the Rio Bravo Boulevard Extension. Therefore, this facility is included in the DMP solution.

Priority - N/A

c. South Rio Bravo Arroyo - Project RB2

Tributary conveyances within the Rio Bravo Basin should occur concurrently with development.

Priority - Low, (required by Development)

d. Avulsion Control

The South Powerline Diversion will cut off the sediment sources west of the powerline and allow local control of avulsions east of the powerline as development occurs. (See Sediment Reconnaissance Mapping in Volume II and Sediment Reconnaissance Report in Volume III for discussion of detailed avulsion potential.)

The avulsion plan:

- ✧ Construct the South Powerline Diversion prior to significant development within the Sacate Blanco, Rio Bravo or northern Borrega Basins.
- ✧ Design conveyance facilities through developed properties to accommodate the worst case combination of uncontrolled upstream avulsions.
- ✧ Control potential Avulsions within the development in a stable manner to eliminate the avulsion potential.

e. Land Use Issues

Runoff Constraints: Due to the proposed capacity of the South Powerline Detention Facility to accommodate the runoff from the west, the long detention times in the detention basins and the capacity of the Rio Bravo Channel, constraining runoff from the Rio Bravo Basin is not proposed.

Priority - N/A

f. Crossing Structures

The Rio Bravo Arroyo is a programmed facility for Bernalillo County. At some time in the future 118th Street, 98th Street and Unser Boulevard may cross this facility. Because the Arroyo is small (5' bottom width), it was estimated that 6' x 6' concrete box culverts would be used for crossing structures. This estimate is included in Project RB2, South Rio Bravo Arroyo Conveyance.

g. Budget

Estimated Budget: The estimated project budget for the proposed facilities is:

South Rio Bravo Arroyo Rundown - $ 1.2 Million
South Rio Bravo Arroyo ROW - $ 60,000
South Rio Bravo Arroyo Conveyance - $518,000
Crossing Structures - South Rio Bravo Arroyo Conveyance - $161,840

Timing: The South Rio Bravo outfall is required to safely convey the design storm from the mesa, across the Gun Club Lateral and into Hubbell Lake. ROW will be required for this facility. Construction of this facility is required under existing conditions to protect the MRGCD Gun Club Lateral since the culvert under the lateral does not have the capacity to convey the design storm.

TABLE III-6
HYDROLOGIC SUMMARY
RIO BRAVO BASIN

AP NO.	MAP NO.	DESCRIPTION	VARIABLE	EXISTING FACILITIES			PROPOSED DMP FACILITIES	
				EXISTING	DEVEX	EXISTING CAPACITY	DMP	FUTURE CAPACITY
43	9	RIO BRAVO ROADWAY CHANNEL AT HUBBELL CHANNEL	Q (cfs)	400	1004	1105	658	1105
			Tvol (AF)	21.1	43.5	2190 cfs	142	
			Runoff (in)	0.66	1.36	(bank full) *	1.44	
			cfs/ac	1.05	2.62		0.56	
44	9	SOUTH RIO BRAVO ARROYO AT HUBBLE LAKE	Q (cfs)	357	734	NA	644	700
			Tvol (AF)	22.8	48.8		45	
			Runoff (in)	0.51	1.19		1.28	
			cfs/ac	0.66	1.49		1.53	

Notes/Legend

AP - Analysis Point - See Figures this report, maps in Volume II and detail hydrology in Volume III.

Q - Peak discharge rate

Tvol - Total runoff volume

Dvol - Maximum detained volume

Runoff - inches of runoff

* Taken from RD-22

cfs/ac - peak discharge rate per acre of contributing area.

Existing - Existing land use and existing drainage facilities.

DEVEX - Fully developed land use and existing drainage facilities.

Capacity - Design capacity.

DMP - Proposed improvements in place, fully developed land use.

RIO BRAVO BASIN (RB)		EXISTING FACILITIES (DEVEX)		WITH DMP	
AP NO.	DESCRIPTION	VARIABLE	100 YR 24 HR.	VARIABLE	100 YR 24 HR.
43	RB CHANNEL @ HUBBELL CH.	Q cfs	1004	Q cfs	658
		TVol AF	43.5	TVol AF	141.6
76	SO. POWERLINE DIVERSION FROM POND 6	Q cfs	–	Q cfs	351
		TVol AF	–	TVol AF	78.4
		DVol AF	–	DVol AF	9.6
77	SO. POWERLINE DIVERSION FROM POND 8	Q cfs	–	Q cfs	56.4
		TVol AF	–	TVol AF	27.4
		DVol AF	–	DVol AF	19.0
44	SOUTH RB ARROYO @ HUBBELL LAKE	Q cfs	734	Q cfs	644
		TVol AF	48.8	TVol AF	45

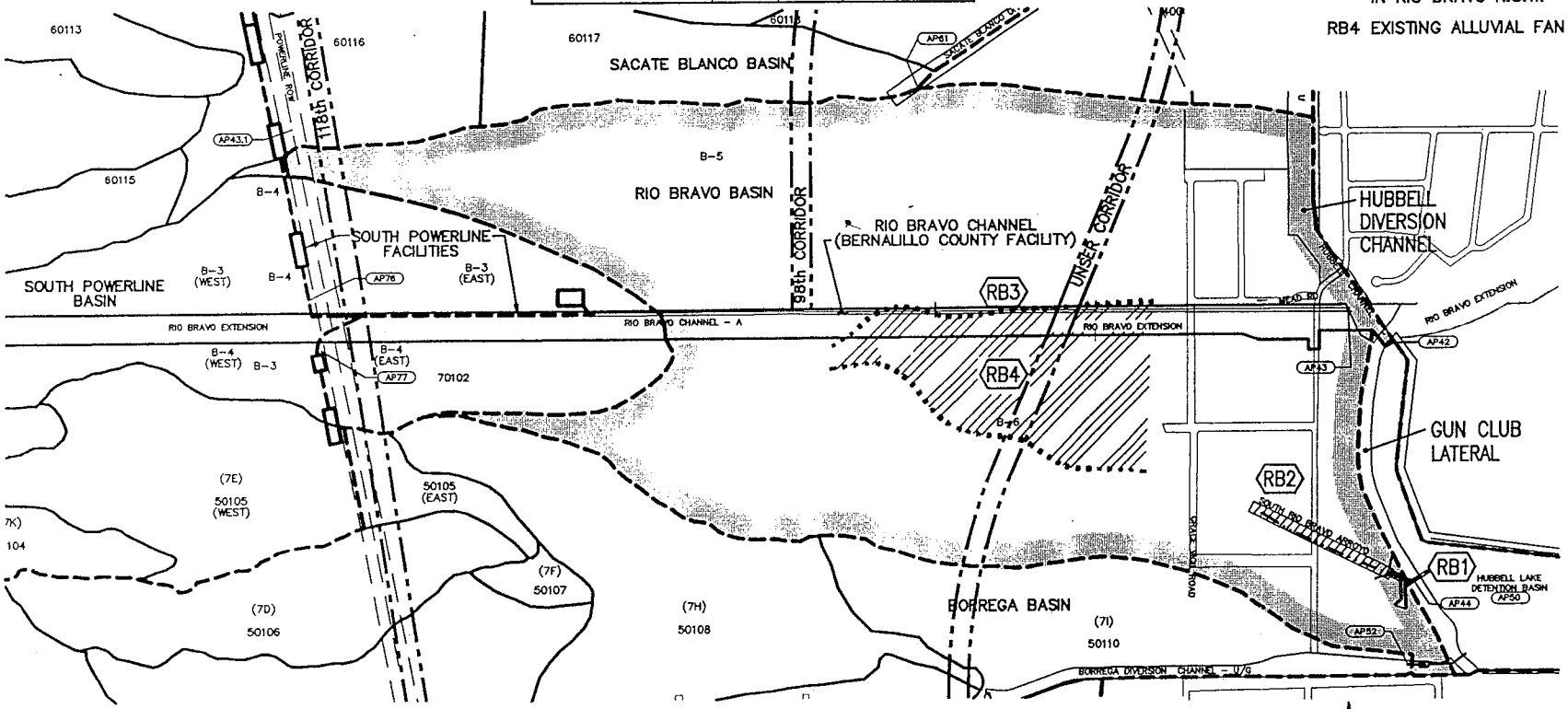
RIO BRAVO BASIN MANAGEMENT PLAN

RB1 SOUTH RIO BRAVO ARROYO 'Y' STRUCTURE INLET. SEE FIGURES III–10 & III–11

RB2 SOUTH RIO BRAVO ARROYO CONVEYANCE

RB3 CONCRETE LINED CHANNEL IN RIO BRAVO R.O.W.

RB4 EXISTING ALLUVIAL FAN



LEGEND

- DMP IMPROVEMENTS
- BASIN BOUNDARIES
- LOCATION STUDY CORRIDOR
- SUBBASIN BOUNDARIES
- (APXX) HYDROLOGIC ANALYSIS POINT
- BASIN BOUNDARY THIS SHEET
- 60110 SUBBASIN ID NUMBER
- (SYX) PROJECT ID NUMBER

N

0 500' 1000' 2000'

1" = 1000'±

AMOLE–HUBBELL D.M.P.

RIO BRAVO BASIN MANAGEMENT PLAN

LEEDSHILL–HERKENHOFF, INC.

FIGURE NO. III–9

I P:\95043\95043_32\DWG\C\RB-BASIN.dwg 3-12-99 KHK

APPENDIX 15

LEEDSHILL-HERKENHOFF MEMO OF MARCH 2, 2000 PROVIDING CLARIFICATIONS RELATIVE TO THE AMOLE-HUBBELL DMP

LEEDSHILL-HERKENHOFF, INC.
TELEPHONE (505) 247-0284
FAX (505) 242-4845

AMAFCA AMOLE DMP
MEMORANDUM

DATE: MARCH 2, 2000

TO: DON DIXON, AMAFCA
MARK HOLSTEAD, GRIENER

RE: AMOLE ARROYO AHYMO RESULTS

In response to questions regarding the AHYMO results published in the Amole-Hubbell DMP, LH checked the runs and text with the following results:

1. Discrepency between flow rates at analysis point 3.1 on Figure III-1, Table III-1 and AHYMO DMP output file.

a. It appears that the flow rate in Table III-1 is the flow at AP 3.2 which is located just above the confluence with Sacate Blanco rather than at AP 3.1 which is further up the arroyo.
b. The flow rates in the table on Figure III-1 for AP 03, 3.1 and 04 appear to be from a different alternative than the one proposed in the Final Report. The corrected DMP Qs are:

AP 03	2824cfs	(Fig III-1 has 2811)
AP3.1	3310cfs	(Fig III-1 has 2925)
AP 4.0	5293cfs	(Fig III-1 has 411)

2. The routing of the flows in the Amole Arroyo were questioned. The routing should conform to the recommended management plan including restricting the outflow from Powerline to 20 cfs, routing the Amole in the easement and use of the composite channel from Snow Vista to Sacate Blanco.

The Amole Arroyo routing in the report appears to be as follows which does not conform to the recommended DMP alternate below the Snow Vista confluence.

Westgate to Powerline - Trap, 5' bottom, 3:1 SS, n=0.018
Powerline to DelGado - Trap, 10-12' bottom, 3:1 SS, n=0.013
DelGado to SnowVista - Trap, 14' bottom, 3:1 SS, n=0.013
Snow Vista to Gibson - Trap, 28' bottom, 2:1 SS, n= 0.013
Gibson to Sacate Blanco - Trap, 22' bottom, 3:1 SS, n=0.013
Sacate Blanco to Detention -Trap, 30' bottom, 3:1 & 5:1 SS, n=0.030

3. Routing of runoff from contributing presently undeveloped basins was also questioned.

Routing of Basins 00103A and 00107 through the adjacent basins uses n=0.03 and relatively wide channel sections, representative of overland flows.