# TERRAVITA

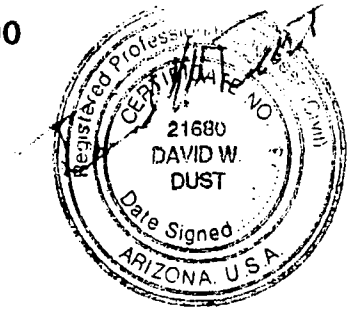
# MASTER DRAINAGE REPORT

## Zoning Case No. 59-ZN-92

March 31, 1993
Revised June 11, 1993

*Prepared For:*

**Del Webb Corporation**
**2231 E. Camelback Road, Suite 400**
**Phoenix, AZ 85016**




*Prepared By:*

Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, Arizona 85014
(602) 264-6831

CVL

September 29, 1993

Report Copy

To: Collis Lovely, Drainage Planner
From: David Gulino, PE, Senior Engineer DSG

Terravita Master Drainage Plan

Thank you for taking the time to itemize your concerns on the approved master drainage plan for Terravita. We have met with the developer and his engineer to discuss these issues. The following are the resolutions we reached.

1. It is understood that the master plan does not specifically identify all washes. Further detail will be required through the final design process.

2. Flow split assumptions divide 100% of the flow. Inorder to provide a factor of safety with regard to these assumptions, downstream drainage facilities will be designed with additional capacity.

3. Wash crossings will be designed in accordance with the ordinance.

4. The final design of Parcel Q will mitigate the existing flooding hazards.

5. Discrepancies in wash locations shown on the exhibits within the master plan are a result of the level of detail utilized in this master planning effort. Local and state codes will be adhered to as more detailed design studies are accomplished.

6. The master plan for this project has been design to reduce all post-development runoff through the use of detention. Pre-development runoff rates simply were not shown to simplify presentation.

7. The discharge value indicates the flow rate immediately upstream of the split. The flow split will be left in its natural condition.

8. The engineer and developer fully understand the discrepancy with the discharge from basin S28 at 60th Street. This will be properly addressed at final design.

9. The Boulders master Drainage plan uses the SCS Type IIa storm distribution for a 100-year, 24-hour storm while the Terravita Master Drainage plan uses the HEC-1 Hypothetical distribution for a 100-year, 6-hour storm. In addition, there are minor differences between the watershed delineations between the two reports.

c. Joe Morris

Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, AZ 85014
(602) 264-6831

# MEMO

TO: Mr. Gene Smith

FROM: David Dust

DATE: September 28, 1993

RE: Terravita - City of Scottsdale Review Comments Regarding the Terravita Master Drainage Report (September 9, 1993)

need to insure design match MDR report

1. "Missing Wash Crossings along Scottsdale Road:" As indicated in Plate 1 of the Terravita MDR, the Terravita MDR addresses the major/minor washes and major off-site drainage areas along Scottsdale Road. However, there are probably hundreds of low discharge washes and swales that intersect Scottsdale Road adjacent to the project site. It may be appropriate to indicate in the MDR that culvert sites and locations for some low discharge washes, depressions created by the road profile, and minor natural drainage swales will need to be evaluated as part of the detailed design for Scottsdale Road.

2. "Re-Evaluation of On-Site Flow Splits:" The flow splits represented in the HEC-1 analysis are based on Normal Depth computations as provided in the MDR (Appendix A). These computations are based on 1" = 100' scale topographic mapping with 1' contour intervals. It is appropriate to require freeboard on all flood control facilities ← 1.0' along the wash corridors to provide for the uncertainties associated with any flow split analyses. It may also be appropriate to stabilize selected flow diversions to maintain the flow split corresponding to existing conditions.

F.F. elev. & Freeboard

Site investigation of the wash system at Terravita indicates that the washes are relatively stable. Hence, making the assumption that 100% of the flow can go either direction at a flow diversion does not appear to be consistent with the geomorphic characteristics of the washes.

understood

3. "Types of Crossings and 100-Year Access:" The MDR indicates that wash crossings will be provided in accordance with City of Scottsdale ordinances. The general types and configurations of wash crossings are addressed in the "environmental" report for the development. The final wash crossing configurations are being evaluated by the developer, Del Webb, at time of parcel development.

4. "Parcel Q is Located within a Floodplain:" Parcel Q is located between two prominent branches of Wash 1 and is located in an area that may be subject to shallow flooding under existing conditions. Final design will mitigate.



CVL

5. "Plate 3 - Location of Flow Leaving the Site:" Plate 3 is a schematic diagram showing the general locations of major washes, preserved wash corridors, wash crossings, and potential retention basin locations. Plate 3 does attempt to indicate that the outfall locations of the major washes that enter and exit the site are not altered. A note on Plate 3 indicating that "discharges exiting the site will be in historical locations with peak 100-year discharges not exceeding existing conditions" may be appropriate and correspond to the intent of the MDR.

6. "Comparison of Pre- vs. Post-Runoff:" Plate 3 and Table 1 summarize the computed discharges exiting the site in major washes and where retention basins do not bleed off directly into the major washes. Due to the 100-year, 2-hour retention requirement, runoff from on-site drainage areas will no longer exit the site except as bleed-off into the major washes; hence, comparison of existing condition discharges and post-development discharges of zero were not deemed useful and have not been shown.

In regard to HEC-1 concentration point "C62," flows from Wash 3 combine with onsite flows, in two channels, from basin "S62" approximately 150' downstream of the property boundary, under existing conditions. Under post development conditions, the two channels from basin "S62" will not convey any flow, due to on-site retention, without the concentration of flow in Wash 3.

7. "Wash 2 Flow Split:" The flow split at the downstream property line along Wash 2 is located within the proposed undisturbed wash corridor. Plate 3 simply indicates the computed total discharge in Wash 2 immediately upstream of the split.

understood. screening will be addressed during final design.

"Basin S28:" A portion of on-site drainage basin "S28" is diverted into Wash 1A by grading apparently associated with 60th Street. Revision of the HEC-1 models would slightly increase the computed discharge in Wash 1A and decrease the peak discharge from basin "S28," by approximately 25%, under EXISTING CONDITIONS. However, the revision would have no significant impact on computed post development discharges, due to on-site retention requirements.

9. "Terravita Report Doesn't Match Boulders Report:" The two studies are based on different events and methodologies as follows:

| Parameter | Terravita | Boulders |
|---|---|---|
| Event: | 100-year, 6-hour | 100-year, 24-hour |
| Distribution: | HEC-1 Hypothetical | SCS Type IIa |

In addition, the Boulders report is inconsistent with respect to how offsite flow enters and exits the site, as can be seen in Figures 4 and 7 of the Boulders report. Basin "S50," in the Terravita Report, was delineated based on site investigations, area 1 photographs, and USGS mapping. As a result, the boundary for basin "S50" is not in complete agreement with the Boulders MDR.

# Transportation Department

7447 E. Indian School Road, Suite 205
Scottsdale, Arizona 85251
Phone: (602)994-7696 • FAX: (602)994-7971


## LETTER OF TRANSMITTAL

TO: Project Review
COS

| DATE | PROJECT NO. |
|---|---|
| 9/9/93 | #59-ZN-92 |
| ATTENTION: Dave Gulino | |
| SUBJECT: Terravita Master Drainage Report - Revised June 11, 1993 | |

THE FOLLOWING ITEMS ARE TRANSMITTED:

☒ Attached
☐ Under Separate Cover via _____

| COPIES | DATE | NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 9/9/93 | 3 pages | Review Comments |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

☒ At Your Request
☐ For Your Approval
☐ For Corrections
☐ For Your Review
☒ For Your Action
☐ For Your Use
☐ For Your Information
☐ Return Corrected Prints
☐ Return Check Prints

REMARKS: Sorry for the delay in getting this back to you. See attached comments.

Generally the report is well done and followed City Manual Procedures, however, it is incomplete in several area - primarily in not addressing all incoming and exiting discharge locations and the split flow assumptions.

COPY TO: Joe Morris

SIGNED BY: [signature]

TO00100 (5/93)

Comments on Terravita MDP
BY: C. Lovely (9/9/93) June 11, 1993 vers.

1. At least 5 washes crossing Scottsdale Rd. that enter the property have not been identified, nor the incoming flows quantified. This needs to be done. (See exhibits (Plates 2-5). (circled question marks)

2. All flow splits DIV 1-5 need to be re-evaluated and percentage of flow going each way needs to be discussed with City staff and appropriate assumptions agreed upon; or a conservative assumption of 100% of the flow going each way made.

3. The types of crossings and 100 year access was still not addressed, as to how it would be provided, as requested in prior review comments.

4. Parcel Q appears totally unacceptable. Its laid out in the middle of a major floodplain.

5. The location of discharge points leaving the site after development is not consistant from one plate (exhibit) to another, and on Plate 3 the MDP appears to be discharging not in the historical location.

This is not permissible and needs to be clarified as to exactly where or a note added that indicates it must match existing conditions.

6. There is no comparison of Pre-vs-Post condition runoff values provided at all natural concentration points (washes under existing conditions). This is a standard minimum requirement of any proposed development generally shown on the MDP.

There are at least 10 such locations shown on Plate three that no discharge was identified. (See circled question marks on Plate 3

In addition S62 and C62 lumped two separate discharge points leaving Parcel K, separate discharge values at each location need to be determined. This same wash as it leaves Parcel N was lumped, however, it exits the

site at three separate locations. Unless the downstream owner has agreed to it all being combined and discharged at one location the MDP must show and quantify flow as each of the 3 separate drainage areas. (See Plate 2+3)

7. The major wash leaving Parcel M (C56) splits right at the property boundary. This split needs to be shown on Plate 3 and not intefered with. It appears all flow is directed one way on Plate 3. This is not parmissable unless the downstream property owners (all affected) and City have approved.

8. Part of watershed area S28 drains north into wash 1A at the west property boundary, not south as indicated on Plate 2. This should be corrected, and the discharge value at the NW corner of 60th St shown, and at S28 corrected.

9. There appears to be a major difference in flow values at C51 between your study (1270 or 1315) and 2000 plus 490 cfs from the Boulders Rpt. Please explain.

different methods

SUBMITTED BY:

David W. Dust

COE & VAN LOO CONSULTANTS, INC.
4550 N. 12th Street
Phoenix, AZ 85014

PREPARED FOR:

DEL WEBB CORPORATION
2231 E. Camelback Road, Suite 400
Phoenix, AZ 85016

APPROVED BY:

CITY OF SCOTTSDALE



CVL

September 29, 1993

To: Collis Lovely, Drainage Planner
From: David Gulino, PE, Senior Engineer

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c. Joe Morris

**TERRAVITA**
**MASTER DRAINAGE REPORT**

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APPENDIX D - HEC-2 MODELS FOR WASHES . . . . . Bound Separately


Registered Professional Engineer (Civil)
CERTIFICATE NO. 21680
DAVID W. DUST
Date Signed 6-4-93
ARIZONA, U.S.A.

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## 1.0 INTRODUCTION

### 1.1 Scope

*Coe & Van Loo Consultants, Inc. (CVL)*, has been contracted by Del Webb to provide site engineering services for the master planned development referred to as Terravita (formerly Del Webb Property). The purpose of this report is to describe the existing drainage conditions and set forth drainage requirements and constraints for future development of the site.

A master drainage plan has been developed that is capable of handling both on-site and off-site drainage according to City of Scottsdale criteria. This plan will be utilized in the overall site infrastructure development and individual parcel engineering.

### 1.2 Project Location

Terravita is located in northern Scottsdale, in the vicinity of the intersection of the Carefree Highway and Scottsdale Road. The project site consists of approximately 803 acres (Figure 1) located within Sections 9, 10 and 11 of Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

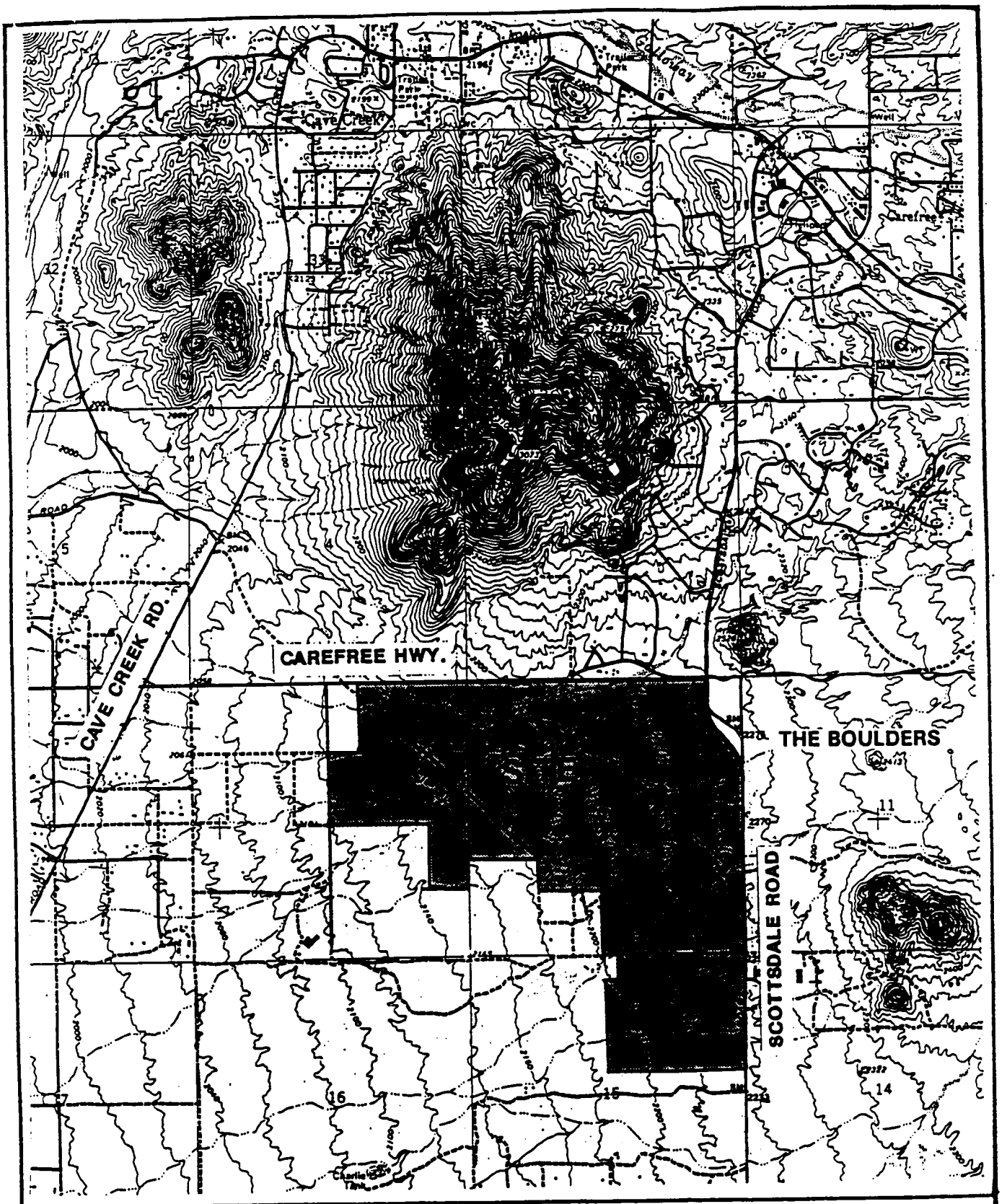
## 2.0 DESCRIPTION OF WATERSHED

### 2.1 General

Terravita is located on gently sloping alluvial terraces with an average slope of 1.5 to 2.5 percent to the southwest along the washes. A significant portion of the off-site drainage areas are currently undeveloped; however, the Boulders Master Planned Community is located adjacent to the eastern boundary of the project site. Within the offsite drainage areas and the project site, vegetation is generally found to be more prominent along lower lying land areas and washes. Several washes traverse the site with offsite watershed areas ranging from approximately 20 acres to two square miles. Typically these washes have a main channel depth of three feet or less with vegetated overbank areas. Topography and aerial photographs infer that during major runoff events, some of the washes may overtop their banks.

### 2.2 Runoff Characteristics

Generally, runoff occurs only during or immediately following heavy precipitation events, since the arid climate and drainage characteristics of the area are not conducive to continuous




N.T.S.

**TERRAVITA**
**LOCATION MAP**

**FIGURE 1**

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LANDSCAPE ARCHITECTURE

flow. Consequently, the natural washes flow intermittently and typically only a few times during a year.

## 3.0 OVERALL DRAINAGE CONCEPT

### 3.1 Off-Site Drainage Plan

#### 3.1.1 Introduction

In accordance with the land use plan, a conceptual master drainage plan has been evaluated for Terravita that collects off-site runoff, passes it through the site with major and minor washes, and then transitions the flow back to natural conditions at the downstream property boundary.

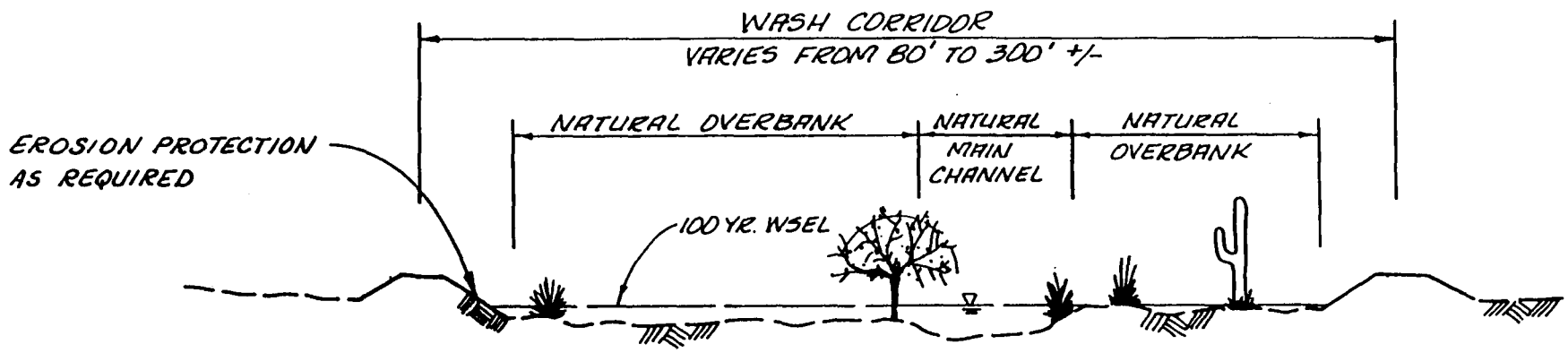
The Boulders Master Planned Community is located upstream of the Terravita project site. The washes exiting the Boulders will be routed under Scottsdale Road through culverts and directed into the Terravita Wash Corridors (Plate 3). The Master Drainage Plan for the Boulders is shown in Plate A-1 (Appendix A). Plate A-1 also summarizes the peak 100-year, 24-hour discharge exiting the Boulders. It is important to note that the Boulders Master Drainage Plan is based on the 100-year, 24-hour rainfall and the SCS Type IIa distribution.

Currently, there are no master planned communities located immediately downstream of the Terravita project site. However, the City of Phoenix has been informed of the proposed development at Terravita.

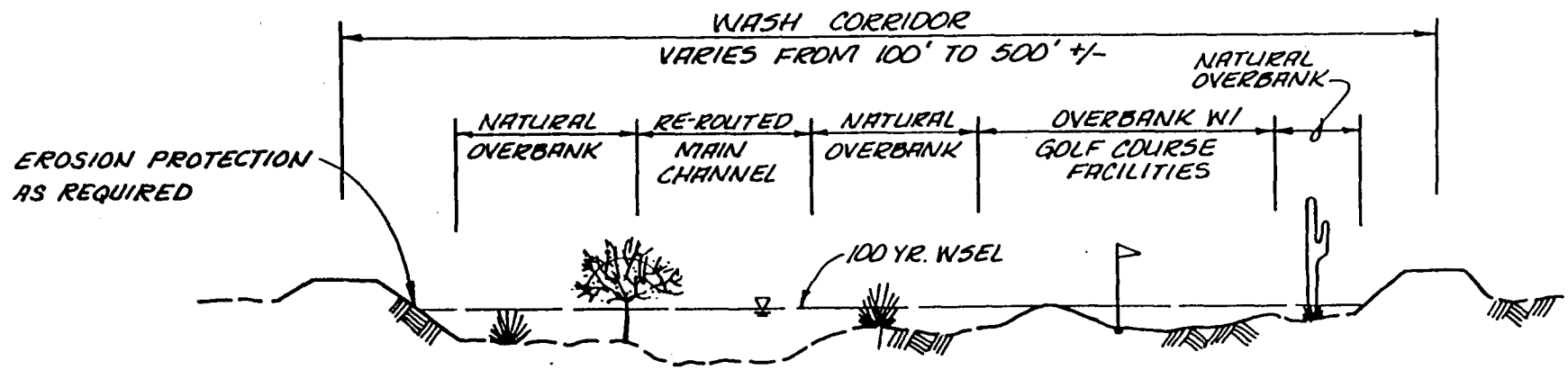
#### 3.1.2 Wash Corridors & Wash Crossings

As indicated in the land use plan (Plate 3), the main channels of the major and minor washes traversing the site will be preserved in their natural setting to the greatest extent possible. The overbanks of the washes may be natural open space areas, improved open space areas, and/or golf course facilities.

Several major and minor washes have been identified within the site and will be preserved for the conveyance of off-site drainage through the site. Existing sheet flow patterns will be intercepted and directed toward these designated washes with collector channels. The washes will serve as a physical and visual amenity to residents in the area, while maintaining the desert environment. In addition, this scheme will generally maintain the existing flow patterns and will discharge downstream of the property in a similar manner to existing conditions.




**TYPICAL SECTION**
**WASH CORRIDOR WITH NATURAL CHANNEL & OVERBANKS**




**TYPICAL SECTION**
**WASH CORRIDOR WITH ADJACENT GOLF COURSE FACILITIES**

**Figure 2**
**TYPICAL WASH CORRIDORS**

CYL

Where flow conditions permit, the main channels of the washes will be left completely natural. However, erosion protection may be installed outside of the preserved wash areas, if required. Typical sections for the proposed wash corridors are illustrated in Figure 2. Finish floor elevations of buildings adjacent to the wash corridors will be a minimum of one foot above the computed 100-year water surface elevation.

Wash crossings will be provided in accordance with City of Scottsdale ordinances. The approximate location of wash crossings are shown in Plate 3.

### 3.2 On-Site Drainage Plan

On-site drainage will be conveyed within street sections, or onsite channels where necessary, and routed to retention/detention basins provided within the development. The City of Scottsdale specifies that on-site retention will be provided to retain the runoff from the 100-year 2-hour storm event.

The retention basins for the site will typically be located in open space areas adjacent to golf course facilities, the preserved wash corridors, or natural area open space (NAOS). The retention basins will typically have 100-year 2-hour storage and metered outlets, that will allow the basins to drain within a 36 hour period. Offsite flows will not be retained or diverted into retention basins in accordance with City of Scottsdale policy.

Plate 3 is a conceptual plan only. The residential street layouts and retention basin locations will be refined as the parcels develop.

### 3.3 Section 404 & NPDES Permitting

In accordance with the Clean Water Act, a Section 404 Letter of Permission will be obtained for the project site, prior to commencing activities within Section 404 jurisdictional areas. A Letter of Permission is a type of expedited individual Section 404 permit procedure recently established by the U.S. Army Corps of Engineers for certain types of development activities with prescribed conditions which may occur within Scottsdale's Environmentally Sensitive Lands area. Conditional water quality certification for these activities has been granted by ADEQ.

Section 404 LOP procedures are applicable to seven categories of activities within Scottsdale's Environmentally Sensitive Lands area. Activities authorized under the LOP are:

1. Road Crossings
2. Utility Line Crossings/Construction
3. Building Pads
4. Channel Diversions and Channel Stabilizations
5. Storm water and Irrigation Storage Facilities
6. Revegetation and Associated Contouring/Grading
7. Restoration and Associated Contouring/Grading

As of October 1, 1992, the National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges requires all owners/operators of construction projects disturbing five or more acres to prepare a Storm Water Pollution Prevention Plan (SWPPP) and file a Notice of Intent (NOI). The NOI must be sent to the United States Environmental Protection Agency with a copy to the City of Scottsdale 48 hours before construction begins. (The city must have evidence of this permit before a development permit will be issued.) The goal of this NPDES storm water permit for construction activities is to reduce erosion potential, minimize sedimentation, and to eliminate non-stormwater discharges for construction sites.

### 3.4 FEMA Flood Hazard Zones

The Terravita project site is currently shown to be in Zone D on Panels 04013C0815E (Sept. 29, 1989) and 04013C0820D (April 15, 1988). FEMA's Zone D is defined as "areas in which flood hazards are undetermined."

Preliminary FIRM maps covering the project site were released in January of 1993. These maps show Terravita to be located in unshaded Zone X on Panels 04013C0815F and 04013C0820F. FEMA's unshaded Zone X is defined as "areas determined to be outside 500 year floodplain."

## 4.0 HYDROLOGIC ANALYSIS

### 4.1 Methodology

The U.S. Army Corps of Engineers HEC-1 Computer program was used to compute the peak flows resulting from the 6-hour storm for both the existing and post development conditions. The drainage areas and tributaries contributing to flows for both the existing and

post-development conditions were based upon existing studies, topographic mapping, field investigation/aerial photographs, and proposed land use plans.

The hydrologic computation sheets documenting the HEC-1 input data parameters are given in Appendix A. The HEC-1 models for Terravita are based on the following methodologies and assumptions.

**Precipitation:** Rainfall values used in the HEC-1 models (PH-Cards) were computed using the 9 step method for determining "Precipitation Values for Various Durations and Return Periods" based on NOAA Atlas 2 (Vol. VIII) data as documented in Section 2.2 (COS, 1993).

**Storm Distribution:** HEC-1's hypothetical storm distribution pattern based on NOAA Atlas 2 rainfall data (COS, 1993).

**Curve Numbers:** Curve numbers for each sub-area were computed based on poor hydrologic conditions, SCS soil mapping (Plate 6), and Figures 2.2-19 and 2.2-20. Percent impervious data was computed for developed areas based on Figure 2.2-16 (COS, 1993).

**Lag Times:** Lag times were computed for each sub-area based on sheet flow, shallow concentrated flow, and channel flow travel times documented in the City's manual (COS, 1993).

**Infiltration Losses:** Infiltration losses are computed by HEC-1 using the SCS Curve Number option.

**Unit Graph:** The SCS Dimensionless Unit Graph was used in the HEC-1 models.

**Channel Routing:** The eight point normal depth routing was used in the HEC-2 models.

**Flow Splits:** Rating curves for flow splits were computed using normal depth computations that are given in Appendix A.

**Retention Basins:** The retention basins in the post-development condition HEC-1 model have capacity for the 100-year, 2-hour event as computed using the rational equation (Appendix A). Spill from the retention basins are directed into the wash corridors or existing washes downstream of the project site.

## 4.2 Existing Conditions

Off-site hydrology is based upon existing development and densities on the watershed. Several major and minor washes have been identified as they cross the site. The remainder of the site consists of swales and local depressions which are tributaries to the major washes.

Existing condition hydrology has been modeled using the HEC-1 model as illustrated in Plates 1 and 2. The computed discharges are summarized in Plate 3, and the corresponding model input and output results are included in Appendix B. Hydrologic computation sheets documenting the HEC-1 input data parameters are given in Appendix A.

### 4.3 Post Development Conditions

The HEC-1 model has been used to model post development conditions. The computed discharges for both existing and post development conditions are summarized in Plate 3 and Table 1. Plate 4 is the HEC-1 schematic diagram for post development conditions. Hydrologic computation sheets documenting the HEC-1 input data parameters are given in Appendix A.

### 4.4 On-Site Retention Requirements

Per the design standards for the City of Scottsdale, 100 year-2 hour retention will be provided for areas within the project site subject to construction, excavation, grading, or paving.

Retention will not be provided for undisturbed areas within the major/minor wash corridors and other natural area open space (NAOS). Estimated retention requirements are given in Table A1 (Appendix A).

## 5.0 HYDRAULIC ANALYSES

### 5.1 Methodology

The U.S. Army Corps of Engineers' HEC-2 computer program was used to evaluate and delineate the 100-year floodplain for the major washes impacting the project site. The HEC-2 analyses are based on 1992 topographic mapping (1" = 100' and C.I. = 2').

### 5.2 Floodplain Delineations

The 100-year floodplain boundaries for the major washes crossing the site are shown on Plate 5. The corresponding HEC-2 models are given in Appendix D. The normal depth computations used to define the flow diversions reflected in the HEC-2 models are given in Appendix A.

## Table 1: Computed Peak Discharges
## Comparison of Computed Peak Discharges

| Concentration PT. I.D. | $Q_{100}$ - 6 Hr. Existing (cfs) | $Q_{100}$ - 6 Hr. Post-Development (cfs) |
|---|---|---|
| DIV3R | 1240 | 1230 |
| C1B | 160 | 160 |
| C26 | 540 | 530 |
| C28 | 115 | 15 |
| C56 | 1700 | 1550 |
| C62 | 790 | 770 |
| C66 | 370 | 360 |
| C68 | 360 | 350 |
| C103 | 840 | 730 |
| S140/RBG1 | 120 | 10 |
| S150/RBG2 | 75 | 10 |

(See Plates 2 & 4 for HEC-1 Schematics)

The major washes in the site exhibit, in general, the following geomorphic and/or hydraulic characteristics:

a) The main channels of the washes appear to have formed over a long period of time and have relatively stable banks that are stabilized by caliche, vegetation and bedrock in various locations.

b) The main channels of the washes typically have capacity for only frequent runoff events.

c) The washes appear to lack the hydraulic characteristics required to erode a channel that has capacity for infrequent or high magnitude events except possibly at locations where man-made features have highly concentrated flow.

d) A main channel may bifurcate into multiple main channels that may or may not recombine downstream.

e) During infrequent events, the flow typically overtops the banks of the main channel(s) and disperses as shallow sheet flow or shallow flow in small local drainage swales.

f) Local runoff flowing in shallow swales is collected by the main channel(s) of the major washes that extend further up into the watershed; that is, the washes exhibit tributary flow characteristics.

The major washes within Terravita typically do not have capacity for the computed 100-year event. A typical section is shown in Figure 3. It appears that once the capacity of the channel is exceeded, flow overtops ridges and sheet flows into local drainage swales. These local drainage swales typically only convey runoff from relatively small local drainage areas and do not directly connect with adjacent major washes.

Due to very shallow weir depths (typically much less than 0.5') and relatively short side weir lengths (typically less than 100'), flow from the major washes into the adjacent local drainage swales are believed primarily to be hydraulically independent from the flow in the major washes. That is, the flow in the adjacent local swales is typically flowing at a different gradient and water surface elevation than the flow in the major wash. Therefore, the local drainage swales, adjacent to the main washes, were blocked out as ineffective flow areas with encroachment cards in the HEC-2 models, where appropriate. If the ineffective flow areas were not blocked out, the computed water surface elevations and velocities could be unrealistically low.

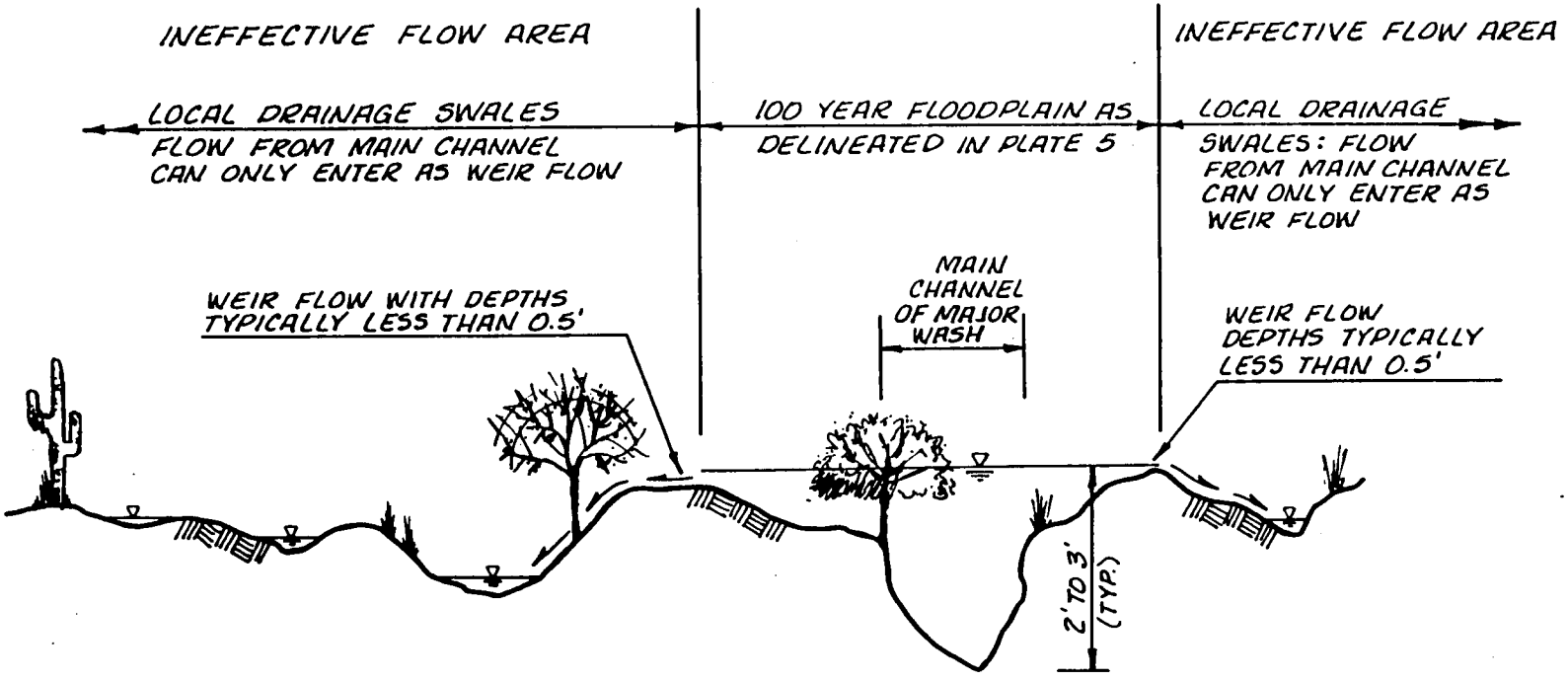



**FIGURE 3**

**TYPICAL SECTION OF FLOODPLAIN**

CYL

## 6.0 CONCLUSIONS

The proposed Conceptual Master Drainage Plan for Terravita involves the following key elements.

* Wash Corridors that will provide 100-year flood protection, while preserving habitat and vegetation along existing major and minor washes.

* Erosion Protection along the wash corridors will be provided as required without being visually obtrusive.

* On-Site Retention will be provided for the 100-year 2-hour rainfall event for all areas within the project site subject to construction, excavation, filling, grading, or paving.

In conclusion, the proposed Conceptual Master Drainage Plan for the Terravita, as presented in this report, is consistent with current City of Scottsdale drainage design standards and environmentally sensitive lands ordinances.

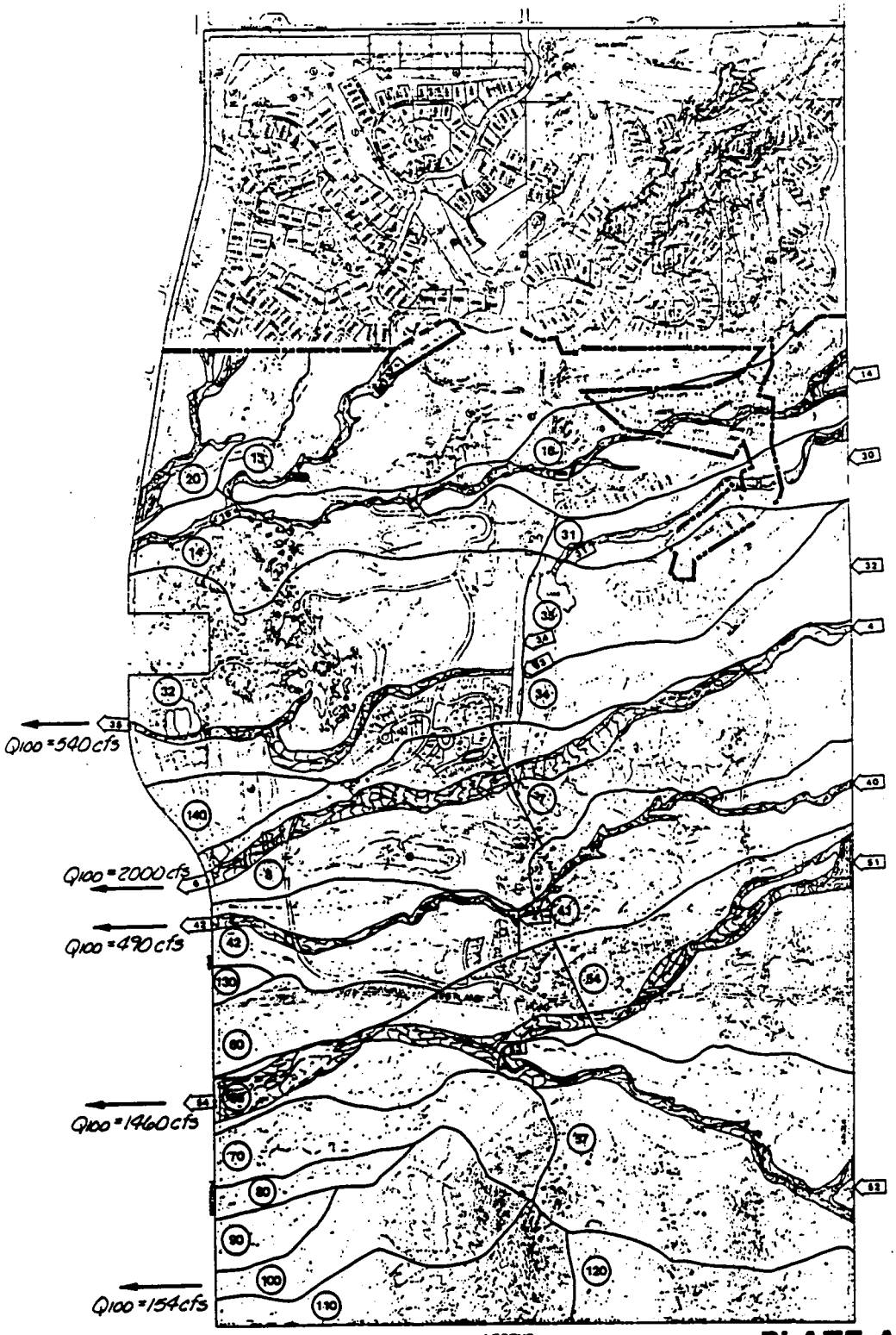
## 7.0 REFERENCES


Gilbertson Assoc., Inc. *Master Drainage Plan, Preliminary Hydrologic and Hydraulic Study, The Boulders, Zoning Case 42-Z-89*, July 24, 1991.

City of Scottsdale (COS), *Design Standards and Policies Manual*, January, 1993.

Soil Conservation Service (SCS), *Soil Survey of the Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, Arizona*, April, 1986.

# APPENDIX A - HYDROLOGIC COMPUTATION SHEETS




**LEGEND**

- LIMIT OF 100YR-24HR WATER SURFACE
- (110) SUB BASIN
- (54) CONCENTRATION POINT
- $Q_{100}$ = 100 cfs — 100 YR-24 HR. PEAK DISCHARGE FROM GILBERTSON ASSOCIATES (1991)

# PLATE A1

FIGURE 7
MASTER DRAINAGE PLAN

BOULDERS
MASTER DRAINAGE PLAN 5

FROM: MASTER DRAINAGE PLAN
PRELIMINARY HYDROLOGIC & HYDRAULIC STUDY,
THE BOULDERS
ZONING CASE 43-2-89
JULY 24, 1991

# TABLE A1

DEL WEBB PROPERTY
CONCEPTUAL ON-SITE RETENTION REQUIREMENTS
RET. VOL.(AC-FT) = (2.82/12)(AREA)(C)

| PARCEL ID | ZONING | "C" COEF. | EST. GROSS AREA(AC) | RETENTION (AC-FT) | EST. GROSS AREA(MI) |
|---|---|---|---|---|---|
| A | R1-10 | 0.53 | 17.00 | 2.12 | 0.027 |
| B | R1-10 | 0.61 | 19.00 | 2.70 | 0.030 |
| C | R1-10 | 0.48 | 16.00 | 1.80 | 0.025 |
| D | R1-10 | 0.47 | 15.20 | 1.68 | 0.024 |
| E | R1-10 | 0.62 | 30.20 | 4.40 | 0.047 |
| F | R1-10 | 0.62 | 11.50 | 1.68 | 0.018 |
| G | R1-10 | 0.62 | 39.90 | 5.81 | 0.062 |
| H | R1-10 | 0.62 | 18.40 | 2.68 | 0.029 |
| I | R1-10 | 0.62 | 27.10 | 3.95 | 0.042 |
| J | R1-10 | 0.62 | 17.30 | 2.52 | 0.027 |
| K | R1-10 | 0.61 | 16.40 | 2.36 | 0.026 |
| L | R1-10 | 0.48 | 18.40 | 2.06 | 0.029 |
| M | R1-10 | 0.49 | 30.90 | 3.52 | 0.048 |
| N | R1-10 | 0.62 | 42.80 | 6.24 | 0.067 |
| O | R1-10 | 0.55 | 9.00 | 1.15 | 0.014 |
| P | R1-10 | 0.48 | 11.70 | 1.31 | 0.018 |
| Q | R1-10 | 0.62 | 9.50 | 1.38 | 0.015 |
| R | R1-10 | 0.47 | 13.30 | 1.47 | 0.021 |
| S | R1-10 | 0.47 | 12.10 | 1.34 | 0.019 |
| T | R1-10 | 0.47 | 36.70 | 4.05 | 0.057 |
| U | R1-10 | 0.48 | 30.90 | 3.47 | 0.048 |
| COMM | C-2 | 0.90 | 13.00 | 2.75 | 0.020 |
| GOLF | O.S. | 0.47 | 240.00 | 26.40 | 0.375 |
| WASH | CORRIDORS | 0.00 | 106.70 | 0.00 | 0.167 |
| TOTALS | | | 803.0 | 86.8 | |

# TABLE A2

DEL WEBB PROPERTY
ESTIMATED "C" VALUE FOR EACH PARCEL

| PARCEL ID | ZONING | PERCENTAGE IN SOIL GROUPS: "B" | "C" | "D" | "C" VALUES FOR SOIL GROUPS: "B" | "C" | "D" | WEIGHTED "C" VALUE |
|---|---|---|---|---|---|---|---|---|
| A | R1-10 | 60 | 40 | | 0.47 | 0.62 | 0.67 | 0.53 |
| B | R1-10 | 10 | 90 | | 0.47 | 0.62 | 0.67 | 0.61 |
| C | R1-10 | 95 | 5 | | 0.47 | 0.62 | 0.67 | 0.48 |
| D | R1-10 | 100 | | | 0.47 | 0.62 | 0.67 | 0.47 |
| E | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| F | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| G | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| H | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| I | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| J | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| K | R1-10 | 5 | 95 | | 0.47 | 0.62 | 0.67 | 0.61 |
| L | R1-10 | 95 | 5 | | 0.47 | 0.62 | 0.67 | 0.48 |
| M | R1-10 | 90 | 10 | | 0.47 | 0.62 | 0.67 | 0.49 |
| N | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| O | R1-10 | 50 | 50 | | 0.47 | 0.62 | 0.67 | 0.55 |
| P | R1-10 | 95 | 5 | | 0.47 | 0.62 | 0.67 | 0.48 |
| Q | R1-10 | | 100 | | 0.47 | 0.62 | 0.67 | 0.62 |
| R | R1-10 | 100 | | | 0.47 | 0.62 | 0.67 | 0.47 |
| S | R1-10 | 100 | | | 0.47 | 0.62 | 0.67 | 0.47 |
| T | R1-10 | 100 | | | 0.47 | 0.62 | 0.67 | 0.47 |
| U | R1-10 | 95 | 5 | | 0.47 | 0.62 | 0.67 | 0.48 |
| COMM | C-2 | | 100 | | 0.90 | 0.90 | 0.90 | 0.90 |
| GOLF | O.S. | 40 | 60 | | 0.33 | 0.56 | 0.66 | 0.47 |

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Project: Terravita
Project No.: 44-0001
Sheet No.: 1 of
Calculated by: DWD Date: 2/93
Checked by: Date:

# Precipitation Values: Return Period vs Duration

| Duration | Return Period 2YR | 10 YR | 25 YR | 50YR | 100 YR |
|---|---|---|---|---|---|
| 5 min | 0.39" | 0.56" | 0.65" | 0.72" | 0.80" |
| 15 min | 0.71" | 1.02" | 1.18" | 1.31" | 1.46" |
| 30 min | 0.93 | 1.35" | 1.56" | 1.73" | 1.94" |
| 1 hr | 1.14" | 1.65" | 1.90" | 2.11" | 2.36" |
| 2 hr | 1.27" | 1.87" | 2.17" | 2.42" | 2.70" |
| 3 hr | 1.36" | 2.01" | 2.34" | 2.63" | 2.92" |
| 6 hr | 1.53" | 2.29" | 2.68" | 3.02" | 3.35" |

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Project Terravita
Project No. 44-0001-
Sheet No. 2 of
Calculated by DWD Date
Checked by Date

Soil Unit Information:

| Soil Unit # (1) | Soil Name (1) | Hydrologic (1) Group | SCS (2) Curve No. |
|---|---|---|---|
| 6 | Anthony-Arizo Complex | A | 63 |
| 96 | Pinaleno-Tres Hermanos Complex | B | 77 |
| 33 | Eloa-Very Gravely Loam | C | 85 |
| 61 | Gran-Wickenburg Complex | D | 88 |
| 63 | Gran-Wickenburg-Rock Outcrop Complex | D | 88 |
| 93 | Nickel-Cave Complex | B/D | 77/88 |
| 72 | Lehmans-Rock Outcrop Complex | D | 88 |

Notes

(1) Source: "Soil Survey of Aguila-Carefree Area, Parts of Maricopa and Pinal Counties" by the USDA-SCS 1986

(2) Poor Hydrologic Condition Assumed - Based on Figure 2.2-20: City of Scottsdale: Section 2.2

See Plate 6

# APPENDIX A

## Steps for Determination of Precipitation Values for Various Durations and Return Periods.

Sheet 1 of 3

(Source: Addendum to "Hydrologic Design for Highway Drainage in Arizona," April 1975, and ADOT, April 17, 1987)

Step 1: From the precipitation maps, Figures 2.2-1 through 2.2-12, determine the precipitation values for the six and twenty four hour durations storms for return periods of 2, 5, 10, 25, 50, and 100 years. Tabulate these values in Table 1 in the column headed "Map Values."

Table 1

| Return Period (Years) | Precipitaton Values (Inches) | | | |
|---|---|---|---|---|
| | 6 hour duration | | 24 hour duration | |
| | Map Value | Corrected Value | Map Value | Corrected Value |
| 2 | 1.51" | 1.53" | 1.88" | 1.91" |
| 5 | 1.93" | 2.00" | 2.62" | 2.60" |
| 10 | 2.27" | 2.29" | 3.02" | 3.05" |
| 25 | 2.73" | 2.68" | 3.58" | 3.58" |
| 50 | 3.05" | 3.02" | 4.04" | 4.07" |
| 100 | 3.36" | 3.35" | 4.56" | 4.55" |

NOTE: There is a possibility of making an error while reading the maps because: (1) a site is not easy to locate precisely on a series of 12 maps, (2) there may be some slight registration differences in printing, and (3) precise interpolation between isolines is difficult. In order to minimize any errors in reading the maps, these values should be plotted on the diagram "Precipitation Depth versus Return Period," Appendix A, Figure 1.

Step 2: Plot these values on the diagram "Precipitation Depth versus Return Period," Appendix A, Figure 1.

Step 3: Draw a line of best fit through the 6 hour precipitation values and another line through the 24 hour precipitation values.

Step 4: Tabulate the values represented by the lines of best fit, obtained in Step 3, in the column of Table 1 entitled "Corrected Value."

NOTE: The 1 hour precipitation value is needed to determine the 2 and 3 hour values as well as the 5, 10, 15, and 30 minute values.

# APPENDIX A

## Steps for Determination of Precipitation Values for Various Durations and Return Periods.

Sheet 3 of 3

(Source: Addendum to "Hydrologic Design for Highway Drainage in Arizona," April 1975, and ADOT April 17, 1987)

Step 5: Using the 6 and 24 hour values for the 2 year and 100 year return periods, from Table 1 (corrected values), solve the following equations to determine the 1 hour values:

$$Y_2 = -0.011 + 0.942(X_1^2 / X_2)$$

$$Y_{100} = 0.494 + 0.755(X_3^2 / X_4)$$

Where: $Y_2$ = 2 year 1 hour value
$Y_{100}$ = 100 year 1 hour value
$X_1$ = 2 year 6 hour value from Table 1
$X_2$ = 2 year 24 hour value from Table 1
$X_3$ = 100 year 6 hour value from Table 1
$X_4$ = 100 year 24 hour value from Table 1

Step 6: To determine 1 hour precipitation values for the other return periods, first plot the 2 year 1 hour value and the 100 year 1 hour value on Figure 1. Connect the two points by a straight line. The values on this line will give the 1 hour precipitation values for the various return periods.

Step 7: To determine the 2 and 3 hour precipitation values, use the following formula with data far the appropriate return period from Table 1 (corrected values):

$$P_{2\ hour} = 0.341\ (P_{6\ hour}) + 0.659\ (P_{1\ hour})$$
$$P_{3\ hour} = 0.569\ (P_{6\ hour}) + 0.431\ (P_{1\ hour})$$

Step 8: The 12 hour precipitation value for any return period is determined by the following equation:

$$P_{12hr} = 0.49\ P_{24\ hour} + 0.51\ P_{6\ hour}$$

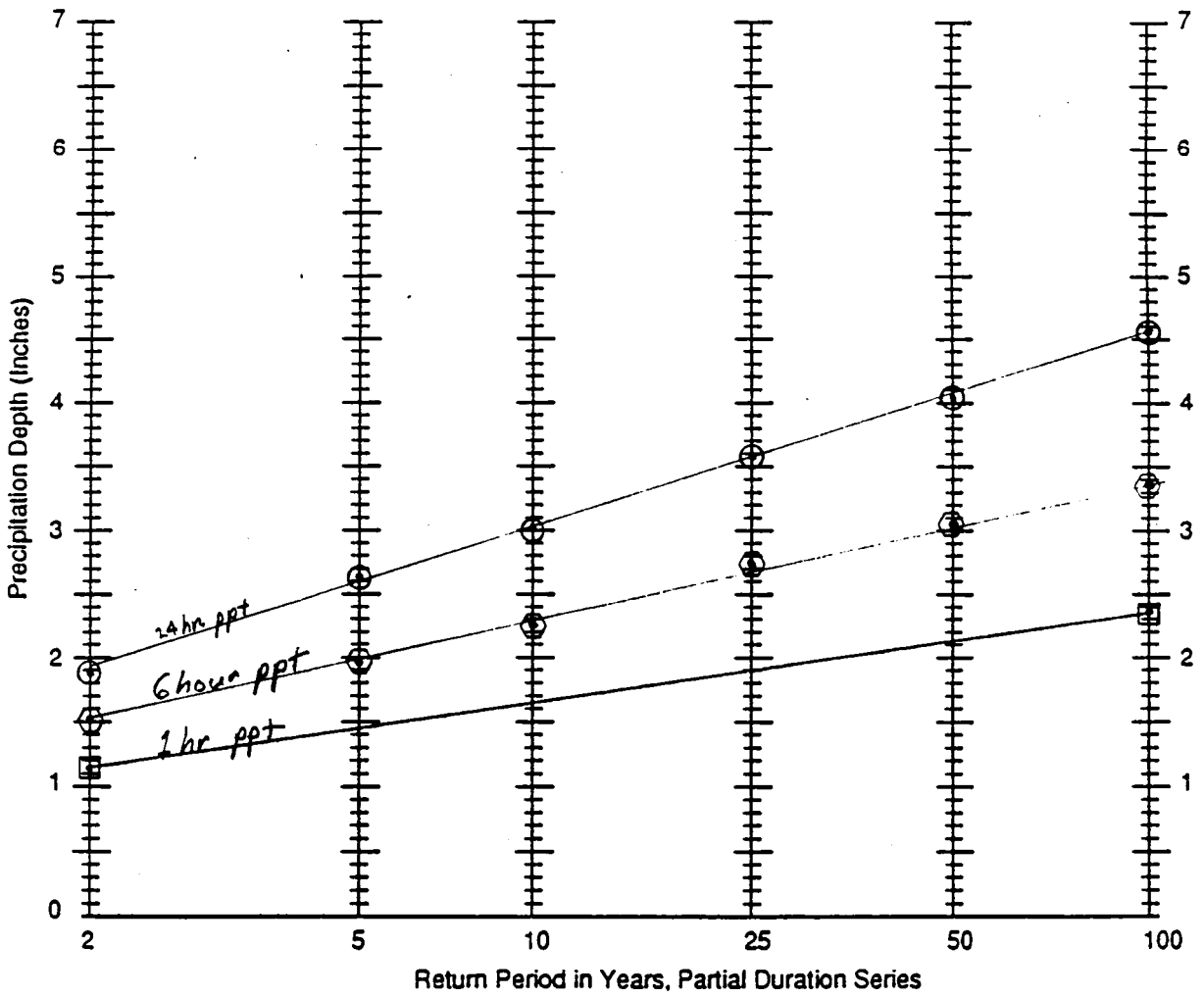
Step 9: To determine precipitation values for durations less than 1 hour for any return period, multiply the 1 hour depth by the following ration:

| | | | | |
|---|---|---|---|---|
| Duration (minutes) : | 5 | 10 | 15 | 30 |
| Ratio to one hour*: | .34 | .51 | .62 | .82 |

*From Arkell and Richards (1986) per FCDMC's Hydrology Manual (9-90)

# APPENDIX A

Figure 1
Precipitation Depth Versus Return Period for Partial - Duration Series
Sheet 2 of 3
(Source: Addendum to "Hydrologic Design for Highway Drainage in Arizona," April 1975)

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Project No. 44-0001
Sheet No. 3 of
Calculated by DWD Date 2/93
Checked by Date

- 1 Hour PPT Values Based On Table 1

$$Y_{2yr-1hr} = -0.011 + 0.942(1.53^2/1.91) = 1.14''$$

$$Y_{100yr-1hr} = 0.494 + 0.755(3.35^2/4.55) = 2.36''$$

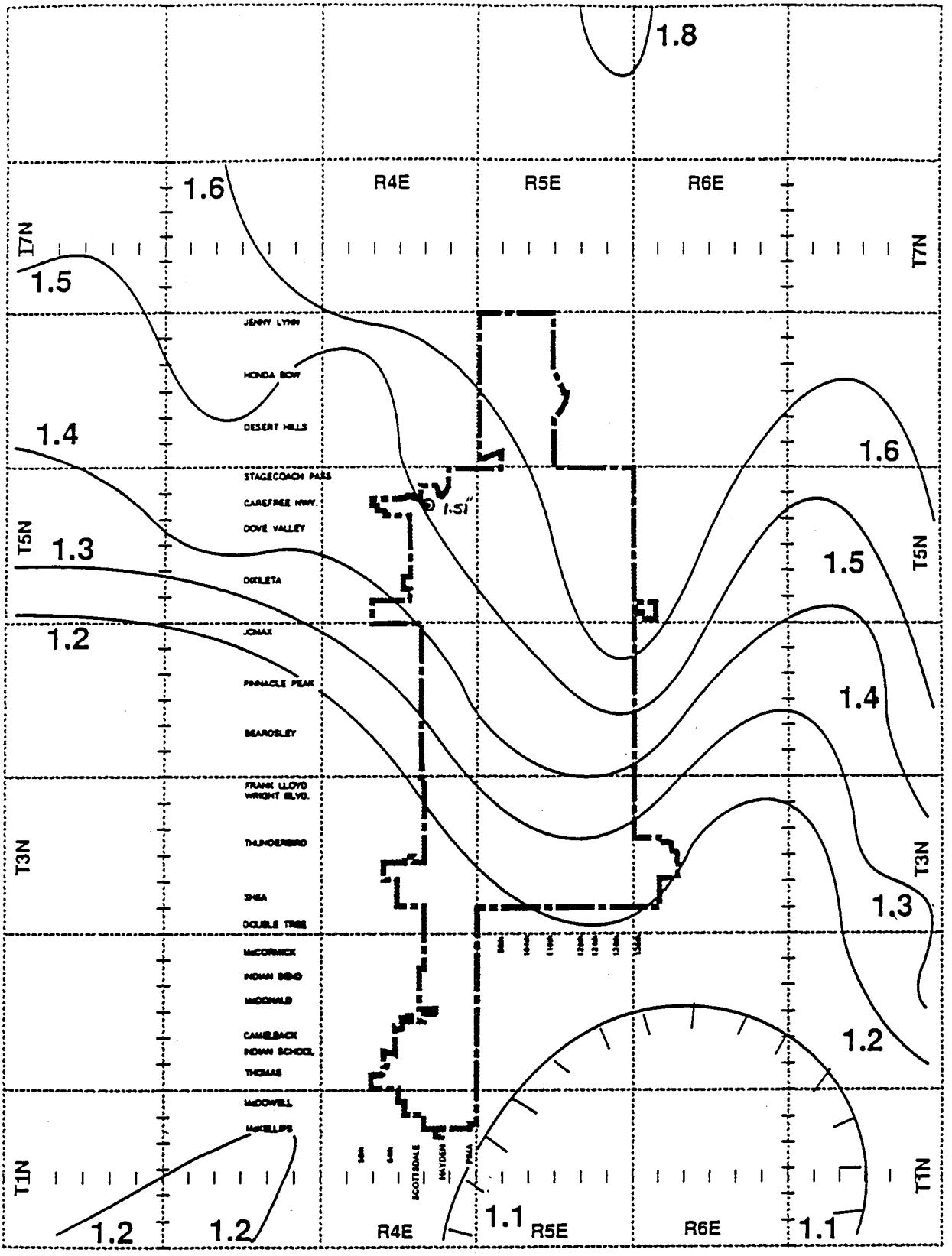
From Figure 1:

$$Y_{5YR-1hr} = 1.45''$$

$$Y_{10YR-1hr} = 1.65''$$

$$Y_{25YR-1hr} = 1.90''$$

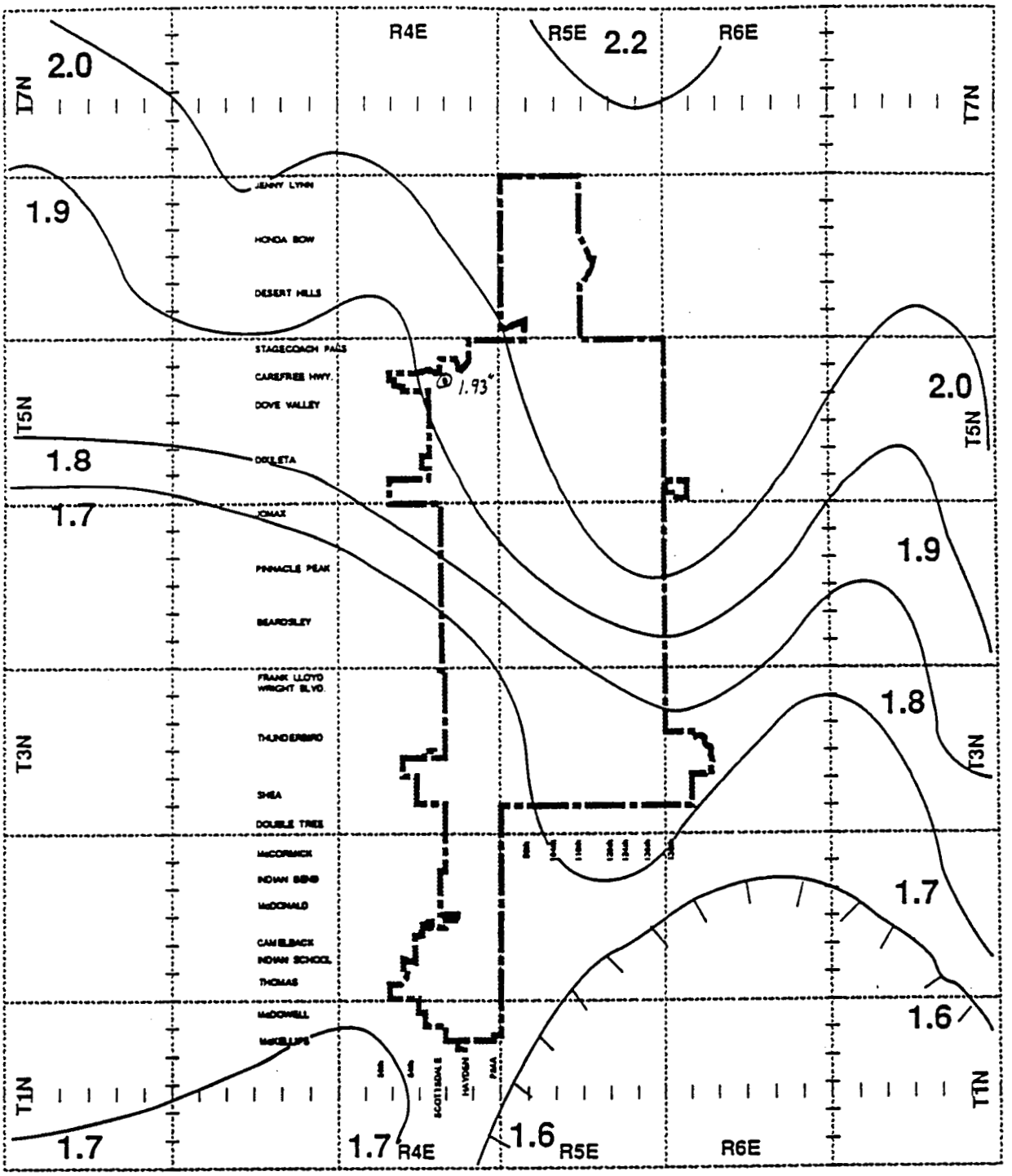
$$Y_{50YR-1hr} = 2.11''$$




# FIGURE 2.2-1

Isopluvials 2 Year 6 Hour Precipitation in Inches

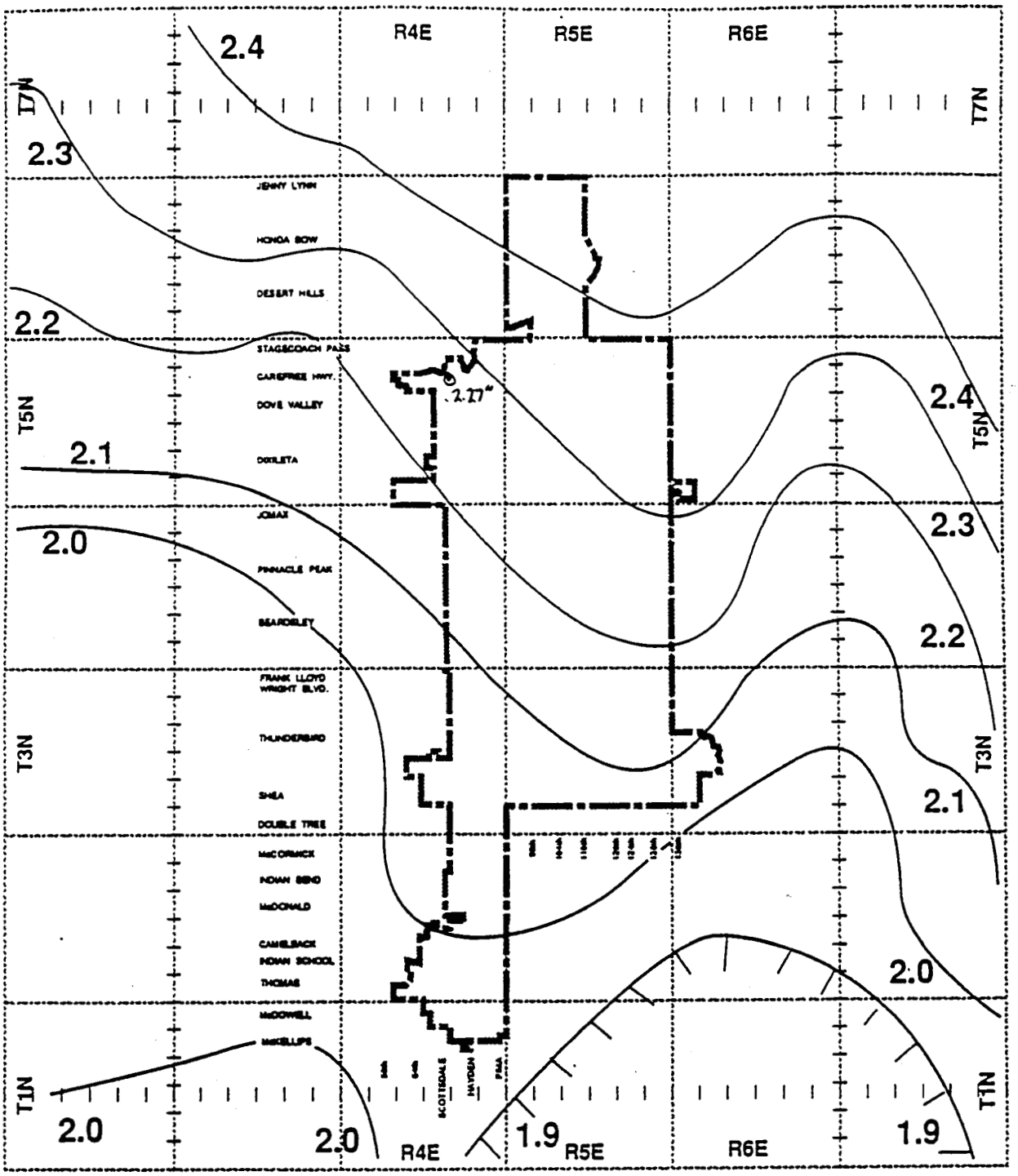
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-2

Isopluvials 5 Year 6 Hour Precipitation in Inches

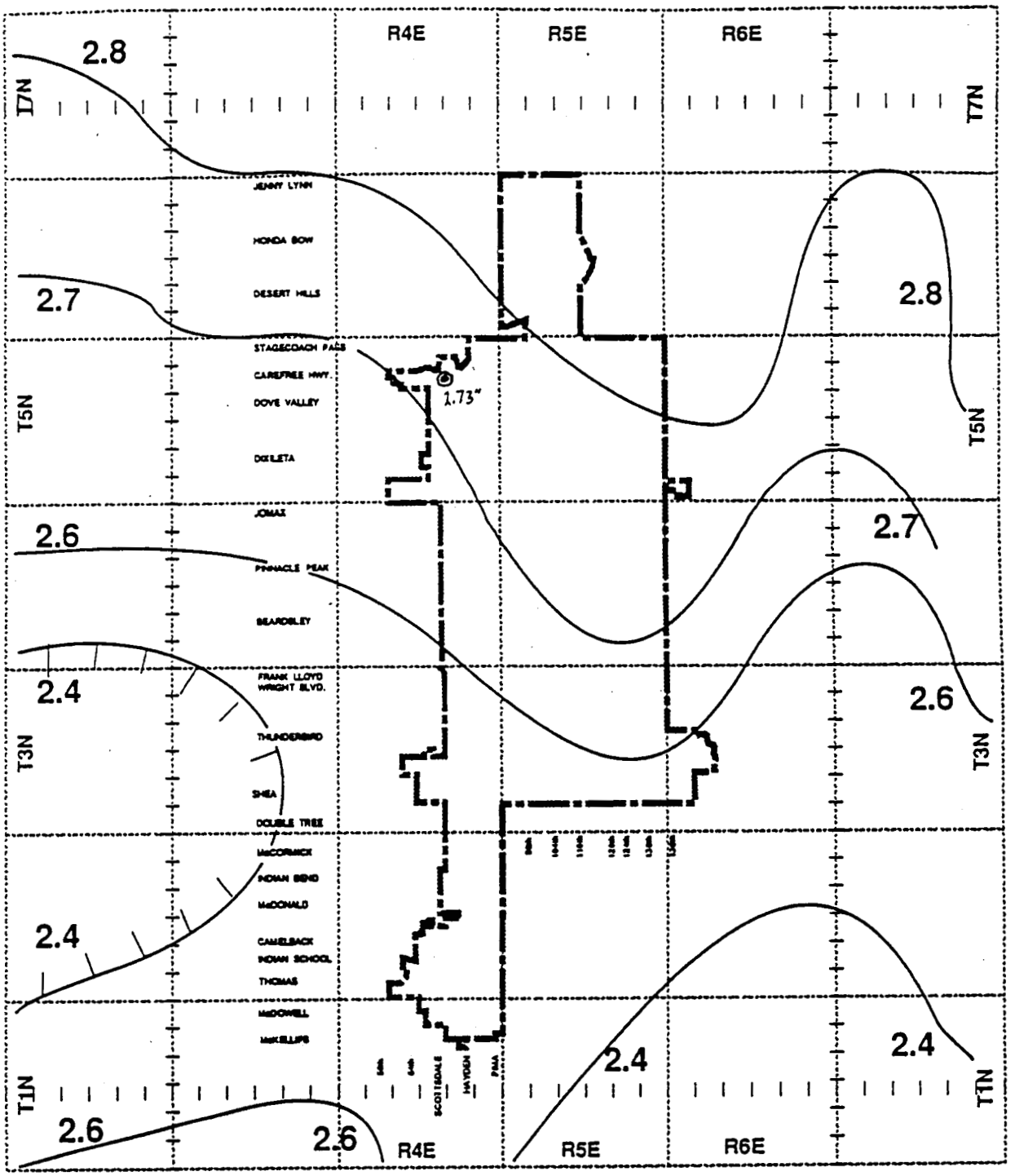
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-3

Isopluvials 10 Year 6 Hour Precipitation in Inches

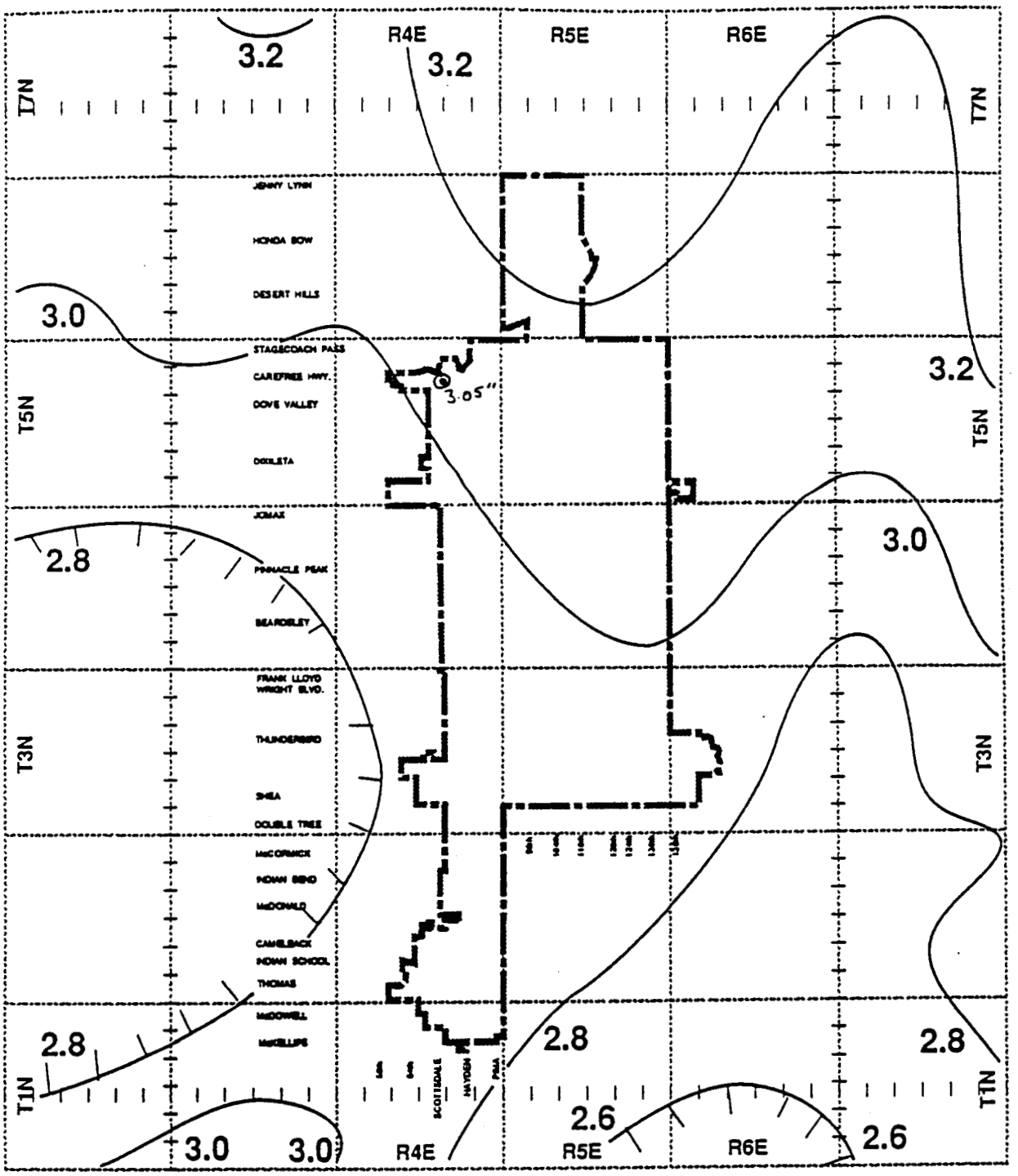
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-4

Isopluvials 25 Year 6 Hour Precipitation in Inches

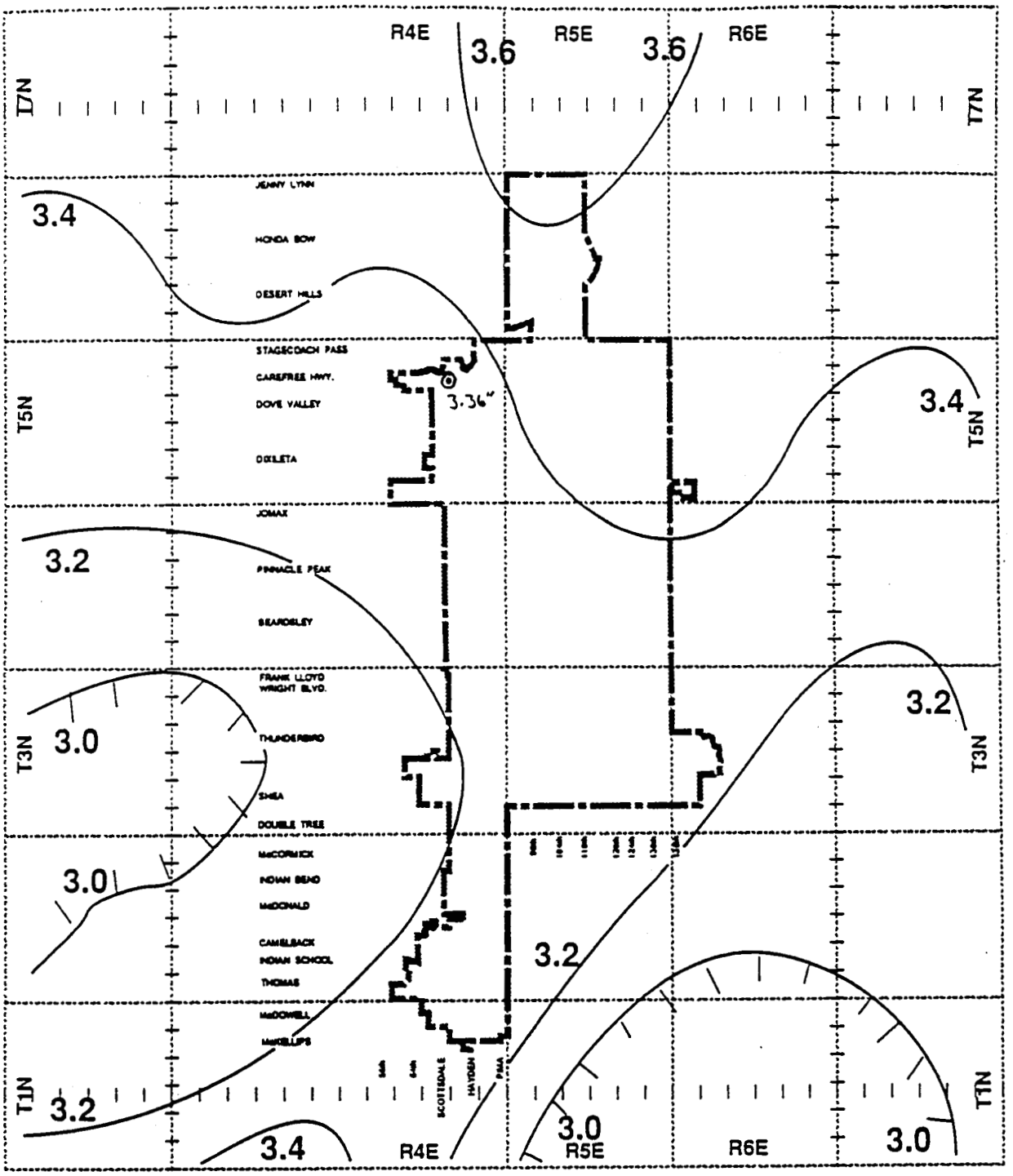
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-5

Isopluvials 50 Year 6 Hour Precipitation in Inches

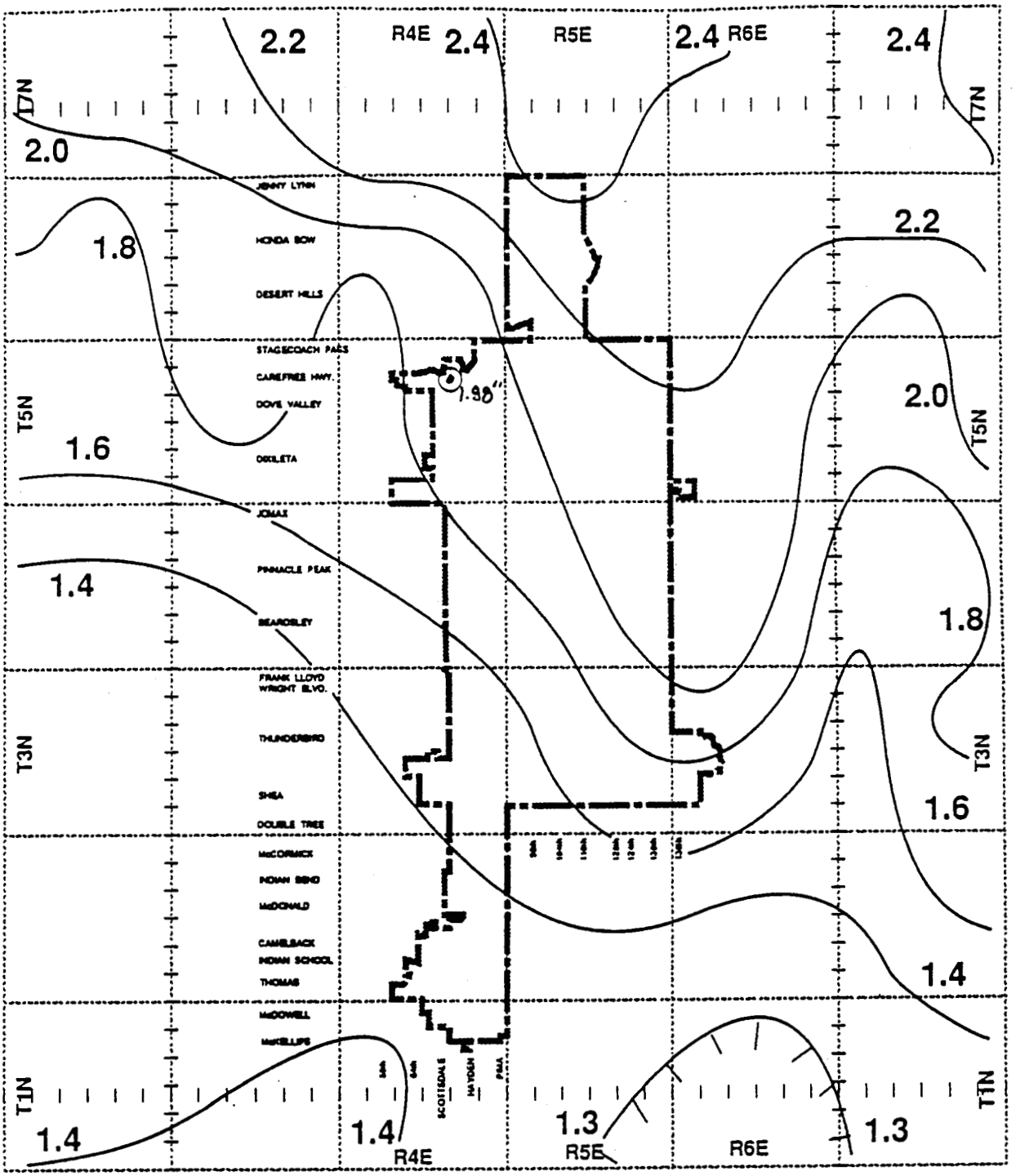
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-6

Isopluvials 100 Year 6 Hour Precipitation in Inches

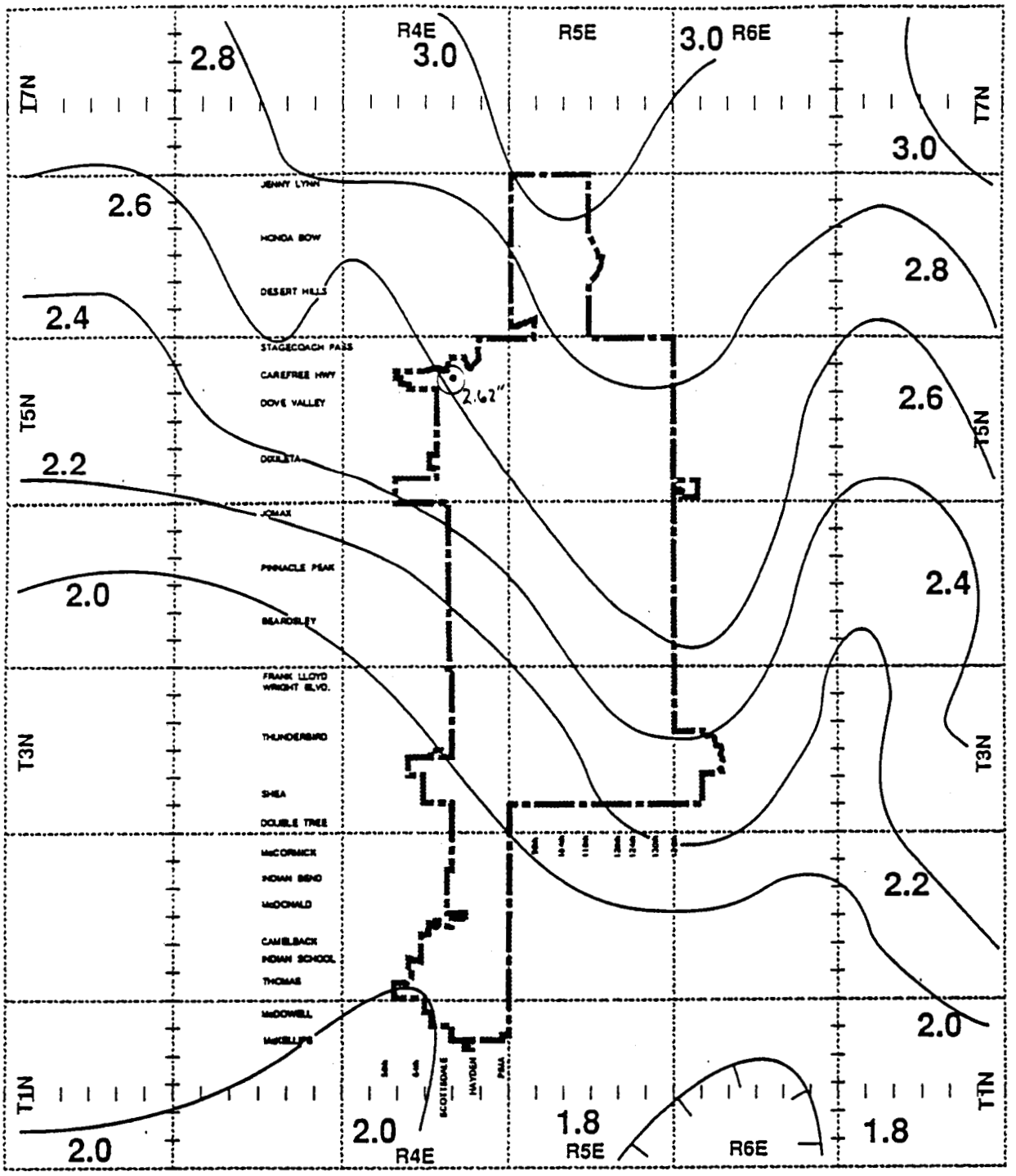
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-7

Isopluvials 2 Year 24 Hour Precipitation in Inches

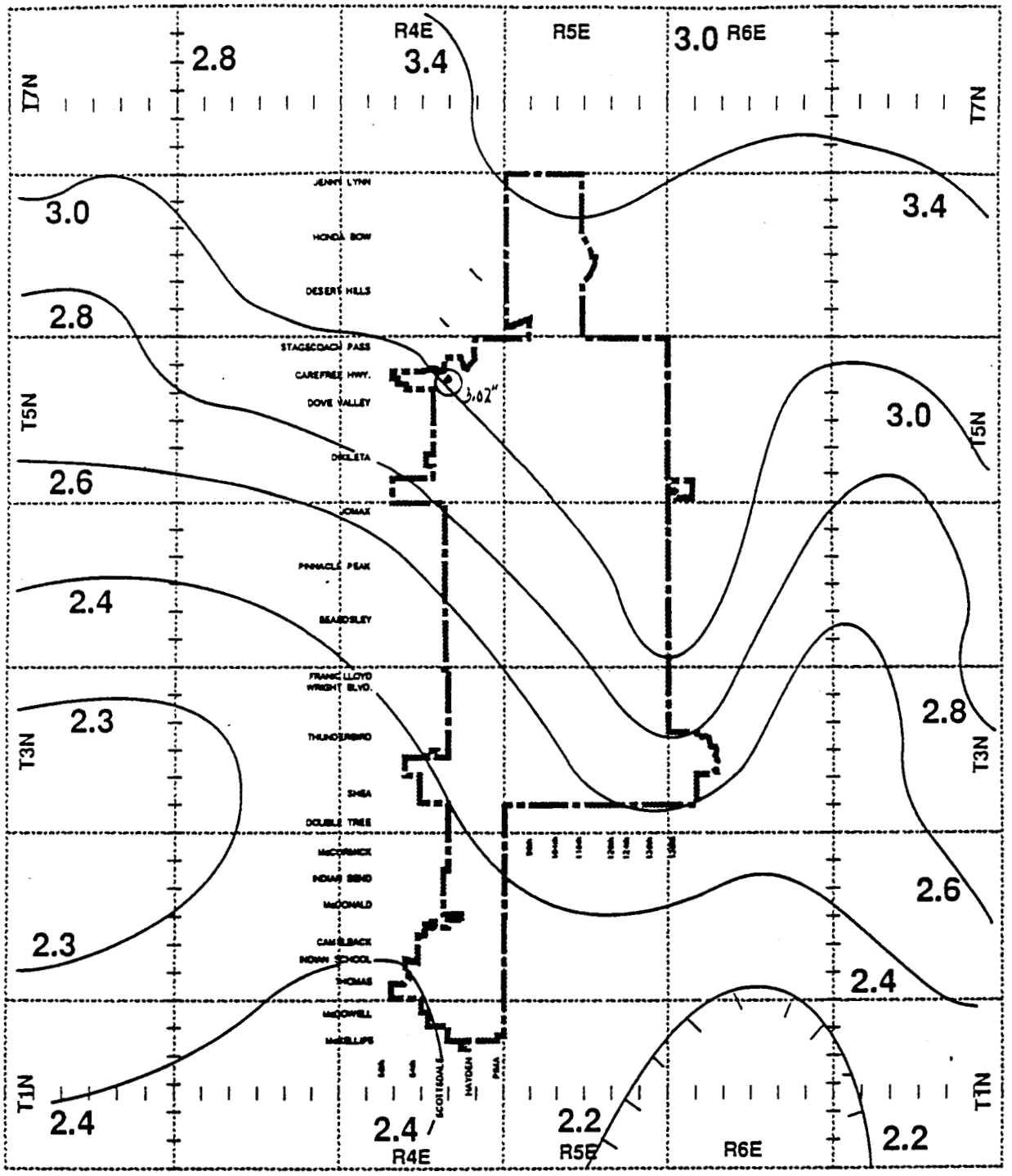
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-8

Isopluvials 5 Year 24 Hour Precipitation in Inches

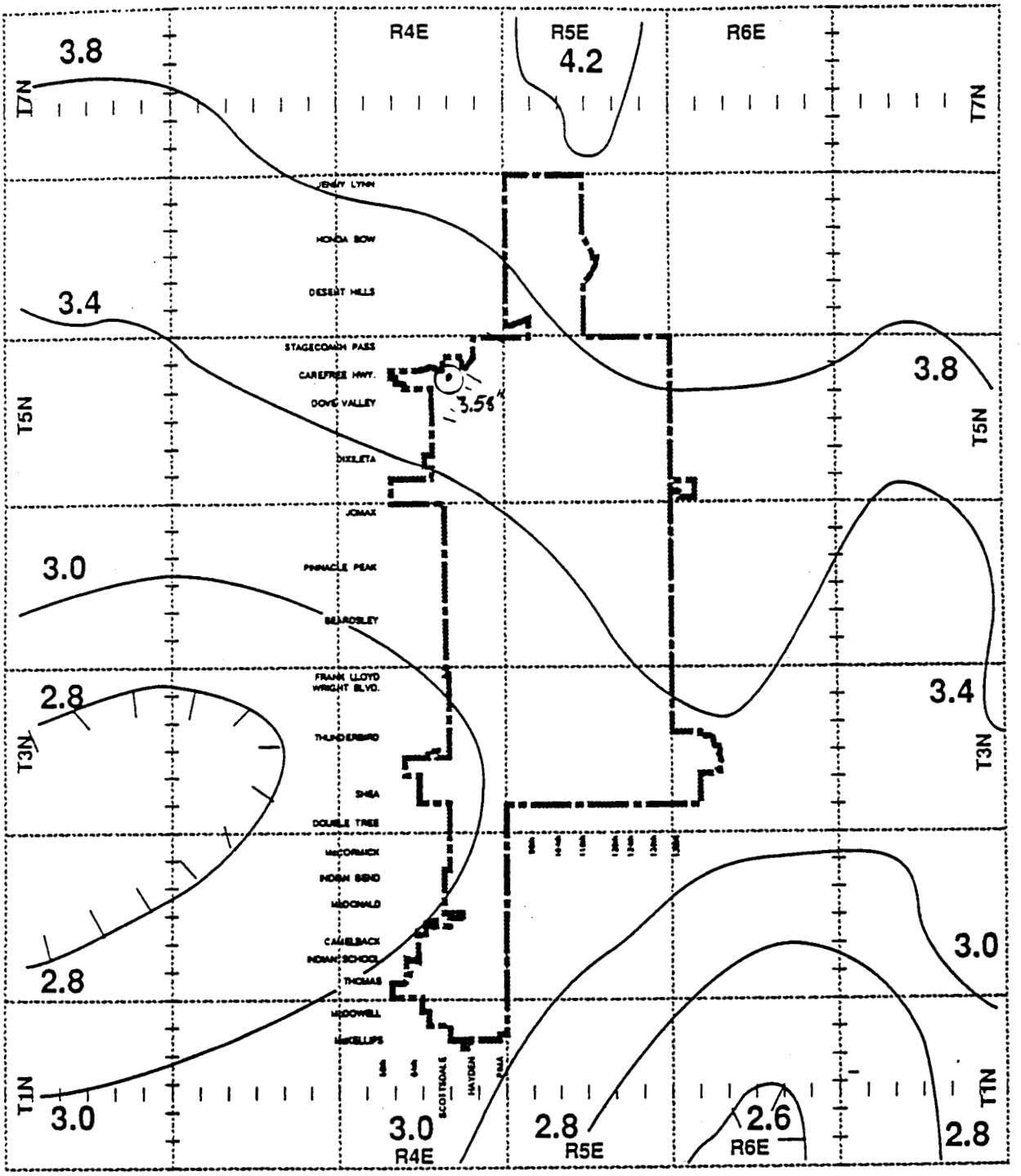
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-9

Isopluvials 10 Year 24 Hour Precipitation in Inches

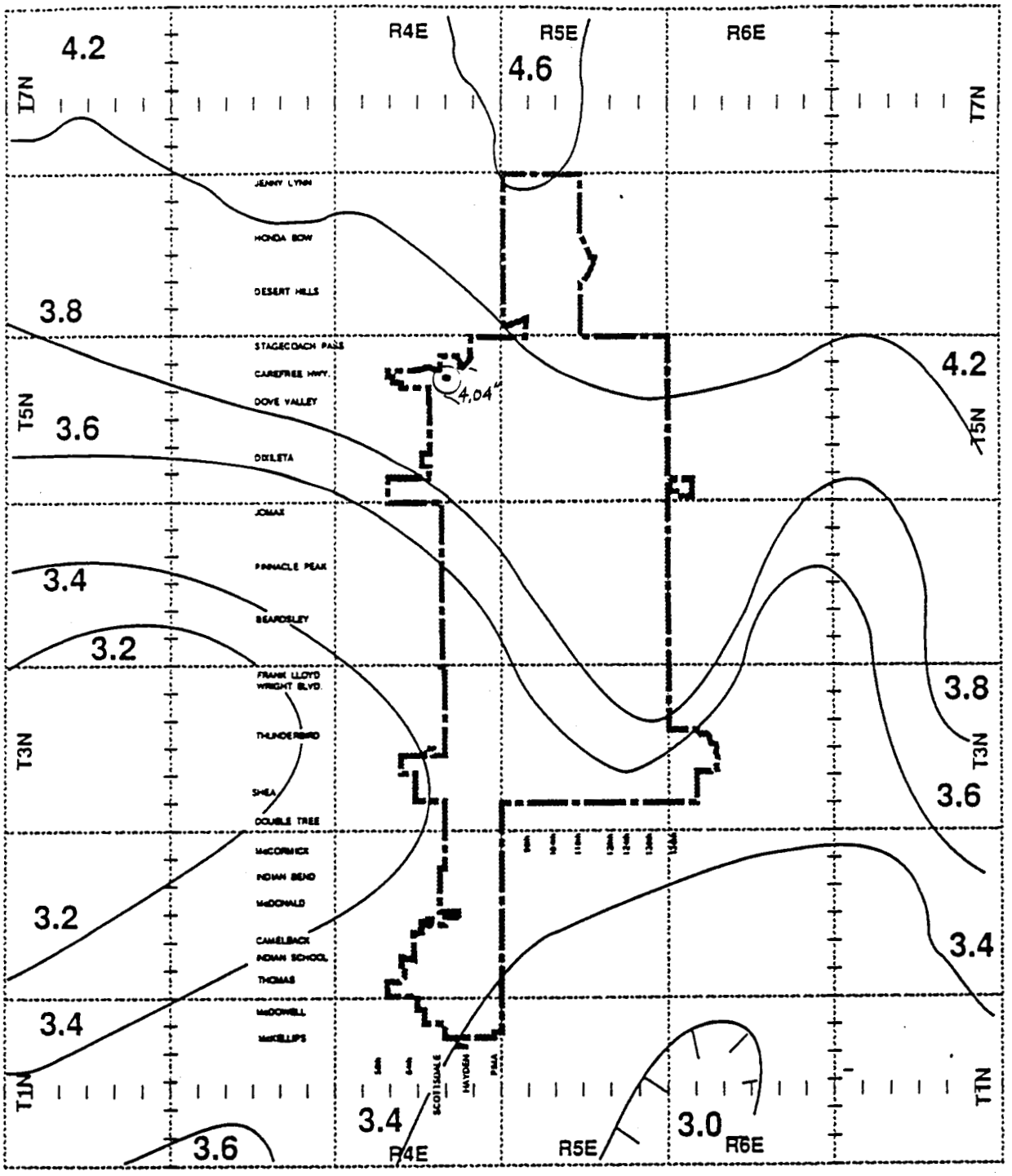
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-10

Isopluvials 25 Year 24 Hour Precipitation in Inches

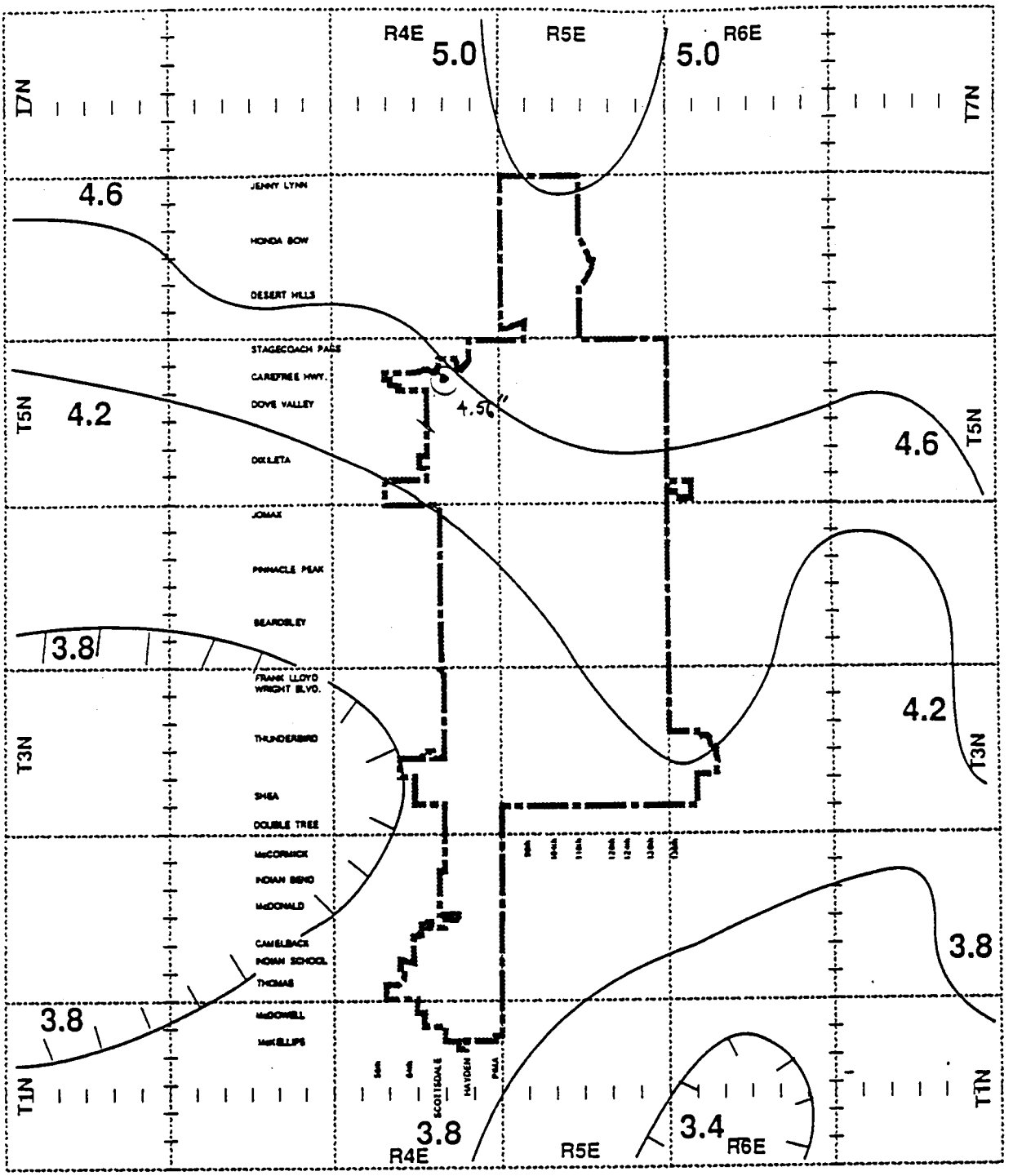
Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-11

Isopluvials 50 Year 24 Hour Precipitation in Inches

Rainfall Data From NOAA Atlas 2, Vol. VIII




# FIGURE 2.2-12

Isopluvials 100 Year 24 Hour Precipitation in Inches

Rainfall Data From NOAA Atlas 2, Vol. VIII

DEL WEBB PROPERTY
CURVE NUMBER COMPUTATIONS - EXISTING CONDITIONS

PERCENTAGE OF SOIL UNIT IN SUB-BASIN
Watershed Condition Assumed : POOR

| BASIN ID | UNIT 6 (CN=63) | UNIT 96 (CN=77) | UNIT 33 (CN=85) | UNITS 61, 63,93,72 (CN=88) | WEIGHTED CURVE NUMBER | PERCENT URBAN | EST. D.U. PER ACRE | PERCENT IMPERVIOUS | TOTAL PERCENT IMPERVIOUS |
|---|---|---|---|---|---|---|---|---|---|
| OFF-SITE SUB-BASINS | | | | | | | | | |
| S8 | | | 100 | | 85 | 80 | 2.5 | 32 | 26 |
| S10 | | | 25 | 75 | 87 | 60 | 2.5 | 32 | 19 |
| S12 | | | 100 | | 85 | 100 | 2.5 | 32 | 32 |
| S14 | | | 50 | 50 | 87 | 90 | 2.5 | 32 | 29 |
| S16 | | 20 | | 80 | 86 | 100 | 2.5 | 32 | 32 |
| S20 | | | 40 | 60 | 87 | 95 | 2.5 | 32 | 30 |
| S30 | | | 10 | 90 | 88 | 95 | 4 | 40 | 38 |
| S40 | 2 | 3 | 90 | 5 | 84 | 50 | 2 | 29 | 15 |
| S50 | 5 | | 20 | 75 | 86 | 100 | 3 | 35 | 35 |
| S60 | | 5 | 30 | 65 | 87 | 40 | 4 | 40 | 16 |
| S70 | | | 100 | | 85 | 100 | 4 | 40 | 40 |
| S80 | | | 90 | 10 | 85 | | | | |
| S90 | | | 70 | 30 | 86 | | | | |
| S94 | | | 70 | 30 | 86 | | | | |
| S100 | | | 65 | 35 | 86 | | | | |
| ON-SITE SUB-BASINS | | | | | | | | | |
| S13 | 5 | | | 95 | 87 | | | | |
| S24 | 5 | 55 | 40 | | 80 | | | | |
| S26 | 2 | 90 | 8 | | 77 | | | | |
| S28 | 8 | 2 | 90 | | 83 | | | | |
| S32 | | 90 | 10 | | 78 | | | | |
| S54 | 5 | 40 | 55 | | 81 | | | | |
| S56 | 5 | 95 | | | 76 | | | | |
| S62 | | 5 | 95 | | 85 | | | | |
| S64 | 5 | | 95 | | 84 | | | | |
| S66 | | 100 | | | 77 | | | | |
| S68 | 5 | 95 | | | 76 | | | | |
| S82 | 5 | | 95 | | 84 | | | | |
| S92 | | | 100 | | 85 | | | | |
| S101 | | | 100 | | 85 | | | | |
| S102 | | | 100 | | 85 | | | | |
| S110 | | 20 | 80 | | 83 | | | | |
| S120 | | | 90 | 10 | 85 | | | | |
| S140 | | | 100 | | 85 | | | | |
| S150 | | | 100 | | 85 | | | | |

DEL WEBB PROPERTY - TRAVEL TIME COMPUTATIONS
OFF-SITE BASINS - EXISTING CONDITIONS

| BASIN ID | S8 | S10 | S12 | S14 | S16 | S20 | S30 | S40 | S50 | S60 | S70 | S80 | S90 | S94 | S100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB-BASIN AREA(SQ.MI.): | 0.031 | 0.368 | 0.034 | 0.119 | 0.044 | 1.910 | 0.420 | 1.600 | 0.530 | 1.810 | 0.029 | 0.058 | 0.063 | 0.132 | 0.148 |
| SHEET FLOW:(1) | | | | | | | | | | | | | | | |
| Manning-n Value: | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.011 | 0.13 | 0.13 | 0.13 | 0.13 |
| Slope(ft/ft): | 0.1 | 0.1 | 0.05 | 0.1 | 0.05 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.1 | 0.1 | 0.1 | 0.1 |
| Flow Length(ft): | 100 | 100 | 100 | 100 | 100 | 200 | 200 | 200 | 200 | 200 | 200 | 100 | 100 | 100 | 100 |
| TRAVEL TIME T1(hr): | 0.090 | 0.090 | 0.119 | 0.090 | 0.119 | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.038 | 0.090 | 0.090 | 0.090 | 0.090 |
| SHALLOW CONC. FLOW:(2) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 500 | 500 | 500 | 500 | 500 | 750 | 750 | 750 | 750 | 750 | 750 | 500 | 500 | 500 | 500 |
| Slope(ft/ft): | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.05 | 0.05 | 0.05 | 0.05 |
| Average Velocity(fps): | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 3.30 | 3.30 | 3.30 | 3.30 |
| TRAVEL TIME T1(hr): | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.04 | 0.04 | 0.04 | 0.04 |
| MAIN CHANNEL:(3) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 900 | 5680 | 900 | 3000 | 1500 | 20500 | 7650 | 25230 | 10410 | 23520 | 1250 | 2850 | 2400 | 3500 | 3850 |
| Average Velocity(fps): | 5.00 | 5.50 | 5.00 | 5.00 | 5.00 | 5.50 | 5.50 | 5.50 | 5.50 | 5.50 | 5.00 | 5.50 | 5.50 | 5.50 | 5.50 |
| TRAVEL TIME T1(hr): | 0.05 | 0.29 | 0.05 | 0.17 | 0.08 | 1.04 | 0.39 | 1.27 | 0.53 | 1.19 | 0.07 | 0.14 | 0.12 | 0.18 | 0.19 |
| TOTAL TRAVEL LENGTH(FT) | 1500 | 6280 | 1500 | 3600 | 2100 | 21450 | 8600 | 26180 | 11360 | 24470 | 2200 | 3450 | 3000 | 4100 | 4450 |
| TOTAL TRAVEL TIME(hr): | 0.183 | 0.419 | 0.211 | 0.299 | 0.245 | 1.402 | 0.753 | 1.641 | 0.892 | 1.555 | 0.200 | 0.276 | 0.254 | 0.309 | 0.327 |
| LAG TIME = 0.6 Tc (hr): | 0.110 | 0.252 | 0.127 | 0.180 | 0.147 | 0.841 | 0.452 | 0.985 | 0.535 | 0.933 | 0.120 | 0.166 | 0.152 | 0.186 | 0.196 |

NOTES:
(1) Based on Manning's kinimatic solution(Scottsdale Hydrology Manual: Section 2.2)
(2) Based on Figure B-1(Scottsdale Hydrology Manual: Section 2.2)
(3) Based on normal depth computations for various channels

DEL WEBB PROPERTY - TRAVEL TIME COMPUTATIONS
ON-SITE BASINS - EXISTING CONDITIONS

| BASIN ID | S13 | S24 | S26 | S28 | S32 | S54 | S56 | S62 | S64 | S66 | S68 | S82 | S92 | S110 | S120 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB-BASIN AREA(SQ.MI.): | 0.078 | 0.034 | 0.119 | 0.081 | 0.074 | 0.044 | 0.171 | 0.193 | 0.017 | 0.115 | 0.047 | 0.052 | 0.083 | 0.109 | 0.052 |
| SHEET FLOW:(1) | | | | | | | | | | | | | | | |
| Manning-n Value: | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.011 | 0.13 | 0.13 | 0.13 | 0.13 |
| Slope(ft/ft): | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |
| Flow Length(ft): | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| TRAVEL TIME T1(hr): | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.274 | 0.038 | 0.274 | 0.274 | 0.274 | 0.274 |
| SHALLOW CONC. FLOW:(2) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 500 | 500 | 750 | 750 | 750 | 750 | 750 |
| Slope(ft/ft): | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Average Velocity(fps): | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| TRAVEL TIME T1(hr): | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.06 | 0.06 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| MAIN CHANNEL:(3) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 2800 | 1850 | 3700 | 2000 | 1800 | 1700 | 6200 | 7150 | 550 | 850 | 1200 | 2600 | 1700 | 3750 | 2200 |
| Average Velocity(fps): | 4.50 | 4.00 | 5.00 | 4.50 | 4.50 | 4.00 | 5.00 | 5.00 | 4.00 | 5.00 | 4.00 | 4.50 | 4.50 | 5.00 | 4.50 |
| TRAVEL TIME T1(hr): | 0.17 | 0.13 | 0.21 | 0.12 | 0.11 | 0.12 | 0.34 | 0.40 | 0.04 | 0.05 | 0.08 | 0.16 | 0.10 | 0.21 | 0.14 |
| TOTAL TRAVEL LENGTH(FT) | 3750 | 2800 | 4650 | 2950 | 2750 | 2650 | 7150 | 8100 | 1250 | 1550 | 2150 | 3550 | 2650 | 4700 | 3150 |
| TOTAL TRAVEL TIME(hr): | 0.540 | 0.495 | 0.572 | 0.490 | 0.478 | 0.485 | 0.711 | 0.764 | 0.374 | 0.383 | 0.214 | 0.527 | 0.472 | 0.575 | 0.503 |
| LAG TIME = 0.6 Tc (hr): | 0.324 | 0.297 | 0.343 | 0.294 | 0.287 | 0.291 | 0.427 | 0.458 | 0.224 | 0.230 | 0.128 | 0.316 | 0.283 | 0.345 | 0.302 |

NOTES:
(1) Based on Manning's kinimatic solution(Scottsdale Hydrology Manual: Section 2.2)
(2) Based on Figure B-1(Scottsdale Hydrology Manual: Section 2.2)
(3) Based on normal depth computations for various channels

DEL WEBB PROPERTY - TRAVEL TIME COMPUTATIONS
ON-SITE BASINS - EXISTING CONDITIONS

| BASIN ID | S101 | S102 | S140 | S150 |
|---|---|---|---|---|
| SUB-BASIN AREA(SQ.MI.): | 0.047 | 0.014 | 0.032 | 0.013 |
| SHEET FLOW:(1) | | | | |
| Manning-n Value: | 0.13 | 0.13 | 0.13 | 0.13 |
| Slope(ft/ft): | 0.025 | 0.025 | 0.025 | 0.025 |
| Flow Length(ft): | 200 | 200 | 200 | 200 |
| TRAVEL TIME T1(hr): | 0.274 | 0.274 | 0.274 | 0.274 |
| SHALLOW CONC. FLOW:(2) | | | | |
| Flow Length(ft): | 750 | 300 | 500 | 300 |
| Slope(ft/ft): | 0.02 | 0.02 | 0.02 | 0.02 |
| Average Velocity(fps): | 2.25 | 2.25 | 2.25 | 2.25 |
| TRAVEL TIME T1(hr): | 0.09 | 0.04 | 0.06 | 0.04 |
| MAIN CHANNEL:(3) | | | | |
| Flow Length(ft): | 1400 | 1300 | 1650 | 1200 |
| Average Velocity(fps): | 4.50 | 4.50 | 4.00 | 4.00 |
| TRAVEL TIME T1(hr): | 0.09 | 0.08 | 0.11 | 0.08 |
| TOTAL TRAVEL LENGTH(FT) | 2350 | 1800 | 2350 | 1700 |
| TOTAL TRAVEL TIME(hr): | 0.453 | 0.391 | 0.450 | 0.395 |
| LAG TIME = 0.6 Tc (hr): | 0.272 | 0.235 | 0.270 | 0.237 |

NOTES:
(1) Based on Manning's kinimatic solution(Scottsdale Hydrology Manual: Section 2.2)
(2) Based on Figure B-1(Scottsdale Hydrology Manual: Section 2.2)
(3) Based on normal depth computations for various channels

DEL WEBB PROPERTY
ROUTING PARAMETERS - NORMAL DEPTH STORAGE
NMIN = 5 MIN

NSTPS = ((L)/(V*NMIN))(1 MIN/60 SEC)
WHERE: NSTPS = NUMBER OF TIME STEPS
L = REACH LENGTH (ft)
V = AVERAGE VELOCITY (fps)
NMIN = NO. OF MINUTES IN EACH TIME STEP

| ROUTE ID | SLOPE (ft/ft) | REACH LENGTH(ft) | BOT. WIDTH OF CHAN.(FT) | OVERBANK WIDTHS(ft) | AVE. VEL.(fps) | NSTPS |
|---|---|---|---|---|---|---|
| R20 | 0.017 | 2050 | 60 | 50 & 50 | 8.5 | 0.8 |
| R25 | 0.017 | 3550 | 60 | 50 & 50 | 8.5 | 1.4 |
| R2L | 0.017 | 3850 | 20 | 40 & 40 | 7.5 | 1.7 |
| R30 | 0.018 | 2250 | 20 | 40 & 40 | 7.9 | 0.9 |
| R48 | 0.023 | 8400 | 12 | 40 & 40 | 9.0 | 3.1 |
| R51 | 0.015 | 3050 | 20 | 40 & 40 | 7.0 | 1.5 |
| R54 | 0.016 | 4150 | 60 | 50 & 50 | 8.0 | 1.7 |
| R70 | 0.017 | 6850 | 20 | 40 & 40 | 7.9 | 2.9 |
| R5R | 0.018 | 1470 | 12 | 40 & 40 | 7.7 | 0.6 |
| R5L | 0.018 | 1750 | 12 | 40 & 40 | 7.7 | 0.8 |
| R80 | 0.018 | 2320 | 12 | 40 & 40 | 7.7 | 1.0 |
| R90 | 0.018 | 3510 | 12 | 40 & 40 | 7.7 | 1.5 |
| R94 | 0.018 | 1950 | 12 | 40 & 40 | 7.7 | 0.8 |
| R100 | 0.018 | 1320 | 12 | 40 & 40 | 7.7 | 0.6 |
| R102 | 0.018 | 1580 | 12 | 40 & 40 | 7.7 | 0.7 |

DEL WEBB PROPERTY
CURVE NUMBER COMPUTATIONS - POST DEVELOPMENT SERVICES

PERCENTAGE OF SOIL UNIT IN SUB-BASIN
Watershed Condition Assumed : POOR

| BASIN ID | UNIT 6 (CN=63) | UNIT 96 (CN=77) | UNIT 33 (CN=85) | UNITS 61, 63,93,72 (CN=88) | WEIGHTED CURVE NUMBER | PERCENT URBAN | EST. D.U. PER ACRE | PERCENT IMPERVIOUS | TOTAL PERCENT IMPERVIOUS |
|---|---|---|---|---|---|---|---|---|---|
| ON-SITE SUB-BASINS | | | | | | | | | |
| A | | 60 | 40 | | 80 | 100 | 3 | 35 | 35 |
| B | | 10 | 90 | | 84 | 100 | 3 | 35 | 35 |
| C | | 95 | 5 | | 77 | 100 | 3 | 35 | 35 |
| D | | 100 | | | 77 | 100 | 3 | 35 | 35 |
| E | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| F | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| G | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| H | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| I | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| J | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| K | | 5 | 95 | | 85 | 100 | 3 | 35 | 35 |
| L | | 95 | 5 | | 77 | 100 | 3 | 35 | 35 |
| M | | 90 | 10 | | 78 | 100 | 3 | 35 | 35 |
| N | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| O | | 50 | 50 | | 81 | 100 | 3 | 35 | 35 |
| P | | 95 | 5 | | 77 | 100 | 3 | 35 | 35 |
| Q | | | 100 | | 85 | 100 | 3 | 35 | 35 |
| R | | 100 | | | 77 | 100 | 3 | 35 | 35 |
| S | | 100 | | | 77 | 100 | 3 | 35 | 35 |
| T | | 100 | | | 77 | 100 | 3 | 35 | 35 |
| U | | 95 | 5 | | 77 | 100 | 3 | 35 | 35 |
| COM | | | 100 | | 85 | 100 | | 50 | 50 |

GOLF COURSE RETENTION REQUIREMENTS
Assuming : 40% NAOS & 60% turf

| | AMC II "B" SOIL (CN=77) | AMC II "C" SOIL (CN=85) | AMC III "B" SOIL (CN=85) | AMC III "B" SOIL (CN=91) | |
|---|---|---|---|---|---|
| SGC1 | 22 | 18 | 33 | 27 | 85 |
| SGC2 | 22 | 18 | 33 | 27 | 85 |
| SGC3 | 22 | 18 | 33 | 27 | 85 |
| SGC4 | 22 | 18 | 33 | 27 | 85 |
| SGC5 | 22 | 18 | 33 | 27 | 85 |
| SGC6 | 22 | 18 | 33 | 27 | 85 |

DEL WEBB PROPERTY - TRAVEL TIME COMPUTATIONS
ON-SITE BASINS - POST DEVELOPMENT CONDITIONS

| BASIN ID | SA | SB | SC | SD | SE1 | SE2 | SF | SG1 | SG2 | SH | SI1 | SI2 | SI3 | SJ | SK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB-BASIN AREA(SQ.MI.): | 0.027 | 0.030 | 0.025 | 0.024 | 0.038 | 0.009 | 0.018 | 0.031 | 0.031 | 0.029 | 0.015 | 0.015 | 0.013 | 0.027 | 0.026 |
| RETENTION VOLUME (ac-ft) | 2.1 | 2.7 | 1.8 | 1.7 | 3.5 | 0.9 | 1.7 | 2.9 | 2.9 | 2.7 | 1.4 | 1.4 | 1.2 | 2.5 | 2.4 |
| AVE. DRAIN RATE(CFS) (4) | 0.7 | 0.9 | 0.6 | 0.6 | 1.2 | 0.3 | 0.6 | 1.0 | 1.0 | 0.9 | 0.5 | 0.5 | 0.4 | 0.8 | 0.8 |
| SHEET FLOW:(1) | | | | | | | | | | | | | | | |
| Manning-n Value: | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Slope(ft/ft): | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 |
| Flow Length(ft): | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| TRAVEL TIME T1(hr): | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 |
| SHALLOW CONC. FLOW:(2) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| Slope(ft/ft): | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Average Velocity(fps): | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| TRAVEL TIME T1(hr): | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 |
| MAIN CHANNEL:(3) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 600 | 850 | 900 | 150 | 500 | 1550 | 600 | 1100 | 1100 | 1000 | 700 | 750 | 350 | 800 | 1100 |
| Average Velocity(fps): | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| TRAVEL TIME T1(hr): | 0.04 | 0.06 | 0.06 | 0.01 | 0.03 | 0.11 | 0.04 | 0.08 | 0.08 | 0.07 | 0.05 | 0.05 | 0.02 | 0.06 | 0.08 |
| TOTAL TRAVEL LENGTH(FT) | 1000 | 1250 | 1300 | 550 | 900 | 1950 | 1000 | 1500 | 1500 | 1400 | 1100 | 1150 | 750 | 1200 | 1500 |
| TOTAL TRAVEL TIME(hr): | 0.495 | 0.512 | 0.515 | 0.463 | 0.488 | 0.560 | 0.495 | 0.529 | 0.529 | 0.522 | 0.501 | 0.505 | 0.477 | 0.508 | 0.529 |
| LAG TIME = 0.6 Tc (hr): | 0.297 | 0.307 | 0.309 | 0.278 | 0.293 | 0.336 | 0.297 | 0.318 | 0.318 | 0.313 | 0.301 | 0.303 | 0.286 | 0.305 | 0.318 |

NOTES:
(1) Based on Manning's kinimatic solution(Scottsdale Hydrology Manual: Section 2.2)
(2) Based on Figure B-1(Scottsdale Hydrology Manual: Section 2.2)
(3) Based on normal depth computations for various channels
(4) MAXIMUM DRAIN TIME = 36 HR

DESERT RESERVE - TRAVEL TIME COMPUTATIONS
ON-SITE BASINS - POST DEVELOPMENT CONDITIONS

| BASIN ID | SL | SM1 | SM2 | SN1 | SN2 | SO | SP | SQ | SR | SS | ST1 | ST2 | SU | SCOM | SGC1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB-BASIN AREA(SQ.MI.): | 0.029 | 0.019 | 0.029 | 0.060 | 0.007 | 0.014 | 0.018 | 0.015 | 0.021 | 0.019 | 0.029 | 0.029 | 0.048 | 0.020 | 0.012 |
| RETENTION VOLUME (ac-ft) | 2.1 | 1.4 | 2.1 | 5.5 | 0.7 | 1.2 | 1.3 | 1.4 | 1.5 | 1.3 | 2.0 | 2.0 | 3.5 | 2.8 | 0.9 |
| AVE. DRAIN RATE(CFS) (4) | 0.7 | 0.5 | 0.7 | 1.8 | 0.2 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.7 | 0.7 | 1.2 | 0.9 | 0.3 |
| SHEET FLOW:(1) | | | | | | | | | | | | | | | |
| Manning-n Value: | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Slope(ft/ft): | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.01 |
| Flow Length(ft): | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 200 |
| TRAVEL TIME T1(hr): | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.393 | 0.321 |
| SHALLOW CONC. FLOW:(2) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 100 | 300 | 300 | 300 | 300 | 300 | 100 | 300 |
| Slope(ft/ft): | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 |
| Average Velocity(fps): | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.00 |
| TRAVEL TIME T1(hr): | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.020 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.020 | 0.083 |
| MAIN CHANNEL:(3) | | | | | | | | | | | | | | | |
| Flow Length(ft): | 1100 | 800 | 1200 | 2150 | 100 | 1050 | 1000 | 100 | 1100 | 900 | 1050 | 1900 | 1400 | 100 | 300 |
| Average Velocity(fps): | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 2.00 |
| TRAVEL TIME T1(hr): | 0.08 | 0.06 | 0.08 | 0.15 | 0.01 | 0.07 | 0.07 | 0.01 | 0.08 | 0.06 | 0.07 | 0.13 | 0.10 | 0.01 | 0.04 |
| TOTAL TRAVEL LENGTH(FT) | 1500 | 1200 | 1600 | 2550 | 500 | 1450 | 1400 | 300 | 1500 | 1300 | 1450 | 2300 | 1800 | 300 | 800 |
| TOTAL TRAVEL TIME(hr): | 0.529 | 0.508 | 0.536 | 0.602 | 0.460 | 0.526 | 0.522 | 0.420 | 0.529 | 0.515 | 0.526 | 0.585 | 0.550 | 0.420 | 0.446 |
| LAG TIME = 0.6 Tc (hr): | 0.318 | 0.305 | 0.322 | 0.361 | 0.276 | 0.315 | 0.313 | 0.252 | 0.318 | 0.309 | 0.315 | 0.351 | 0.330 | 0.252 | 0.267 |

NOTES:
(1) Based on Manning's kinimatic solution(Scottsdale Hydrology Manual: Section 2.2)
(2) Based on Figure B-1(Scottsdale Hydrology Manual: Section 2.2)
(3) Based on normal depth computations for various channels
(4) MAXIMUM DRAIN TIME = 36 HR

DESERT RESERVE - TRAVEL TIME COMPUTATIONS
ON-SITE BASINS - POST DEVELOPMENT CONDITIONS

| BASIN ID | SGC2 | SGC3 | SGC4 | SGC5 |
|---|---|---|---|---|
| SUB-BASIN AREA(SQ.MI.): | 0.024 | 0.024 | 0.032 | 0.029 |
| RETENTION VOLUME (ac-ft) | 1.7 | 1.7 | 2.2 | 2.1 |
| AVE. DRAIN RATE(CFS) (4) | 0.6 | 0.6 | 0.7 | 0.7 |
| SHEET FLOW:(1) | | | | |
| Manning-n Value: | 0.1 | 0.1 | 0.1 | 0.1 |
| Slope(ft/ft): | 0.01 | 0.01 | 0.01 | 0.01 |
| Flow Length(ft): | 200 | 200 | 200 | 200 |
| TRAVEL TIME T1(hr): | 0.321 | 0.321 | 0.321 | 0.321 |
| SHALLOW CONC. FLOW:(2) | | | | |
| Flow Length(ft): | 300 | 300 | 300 | 300 |
| Slope(ft/ft): | 0.01 | 0.01 | 0.01 | 0.01 |
| Average Velocity(fps): | 1.00 | 1.00 | 1.00 | 1.00 |
| TRAVEL TIME T1(hr): | 0.083 | 0.083 | 0.083 | 0.083 |
| MAIN CHANNEL:(3) | | | | |
| Flow Length(ft): | 1400 | 1900 | 100 | 1300 |
| Average Velocity(fps): | 2.00 | 2.00 | 2.00 | 2.00 |
| TRAVEL TIME T1(hr): | 0.19 | 0.26 | 0.01 | 0.18 |
| TOTAL TRAVEL LENGTH(FT) | 1900 | 2400 | 600 | 1800 |
| TOTAL TRAVEL TIME(hr): | 0.598 | 0.668 | 0.418 | 0.585 |
| LAG TIME = 0.6 Tc (hr): | 0.359 | 0.401 | 0.251 | 0.351 |

NOTES:
(1) Based on Manning's kinimatic solution(Scottsdale Hydrology Manual: Section 2.2)
(2) Based on Figure B-1(Scottsdale Hydrology Manual: Section 2.2)
(3) Based on normal depth computations for various channels
(4) MAXIMUM DRAIN TIME = 36 HR

NUMERICAL BASIS FOR UNIFORM FLOW COMPUTATIONS

EQ. (1): $Q = \frac{1.486}{Ne} S^{1/2} R^{2/3} A$ SOURCE: (CHOW, 1959)

EQ. (2): $Ne = \left[ \frac{\sum A_i (n_i^{1.5})}{A} \right]^{2/3}$ SOURCE: (FRENCH, 1985)

EQ. (3): $A = \sum A_i$

EQ. (4): $D = \frac{A}{Tw}$ SOURCE: (CHOW, 1959)

WHERE:

Q = DISCHARGE (cfs)

S = SLOPE OF HYDRAULIC GRADE LINE (ESTIMATED WITH BED SLOPE) (ft/ft)

R = HYDRAULIC RADIUS (ft) = A/WP

A = FLOW AREA ($ft^2$)

$A_i$ = INCREMENTAL FLOW AREA ($ft^2$)

WP = WETTED PERIMETER (ft)

D = HYDRAULIC DEPTH (ft)

Ne = EQUIVALENT MANNING - n VALUE

SOURCE: CHOW, *OPEN CHANNEL HYDRAULICS*, McGRAW HILL, NEW YORK, 1959.

SOURCE: FRENCH, *OPEN-CHANNEL HYDRAULICS*, McGRAW HILL, NEW YORK, 1985.

Project Terravita
Project No. 44-0001
Sheet No. 1 of 3
Calculated by DWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Routing Channel - BW=12'

CROSS SECTION PARAMETERS: FILENAME: RB12.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 8 | Bed Slope: | 0.01800 | Max Elev: | 15.5 |
| Bank Stations.....Left: | 91.5 | Right....: | 108.5 | Min Elev: | 10.0 |
| Encroachment Stations..Left: | 48.5 | Right....: | 151.5 | | |
| Manning-n Values.....LOB: | 0.055 | CHANNEL..: | 0.035 | ROB.....: | 0.055 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 15.5 | 48.5 | 2) | 12.5 | 51.5 | 3) | 12.5 | 91.5 | 4) | 10.0 | 94.0 |
| 5) | 10.0 | 106.0 | 6) | 12.5 | 108.5 | 7) | 12.5 | 148.5 | 8) | 15.5 | 151.5 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 11.00 | 67.8 | 5.2 | 0.954 | 0.035 | 0.9 | 14.0 | 13.0 | 14.8 |
| 12.00 | 216.9 | 7.7 | 1.032 | 0.035 | 1.8 | 16.0 | 28.0 | 17.7 |
| 13.00 | 336.6 | 4.0 | 0.749 | 0.045 | 0.9 | 98.0 | 85.0 | 100.5 |
| 14.00 | 1105.4 | 6.0 | 0.780 | 0.049 | 1.8 | 100.0 | 184.0 | 103.3 |
| 15.00 | 2200.1 | 7.7 | 0.814 | 0.050 | 2.8 | 102.0 | 285.0 | 106.1 |

NOTES:

Project
Project No.
Sheet No. 2 of 3
Calculated by DwD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Routing Channel – BW = 20'

CROSS SECTION PARAMETERS: FILENAME: RB20.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 8 | Bed Slope: | 0.01700 | Max Elev: | 15.5 |
| Bank Stations.....Left: | 91.5 | Right....: | 116.5 | Min Elev: | 10.0 |
| Encroachment Stations..Left: | 48.5 | Right....: | 159.5 | | |
| Manning-n Values.....LOB: | 0.055 | CHANNEL..: | 0.035 | ROB.....: | 0.055 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 15.5 | 48.5 | 2) | 12.5 | 51.5 | 3) | 12.5 | 91.5 | 4) | 10.0 | 94.0 |
| 5) | 10.0 | 114.0 | 6) | 12.5 | 116.5 | 7) | 12.5 | 156.5 | 8) | 15.5 | 159.5 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 11.00 | 110.0 | 5.2 | 0.944 | 0.035 | 1.0 | 22.0 | 21.0 | 22.8 |
| 12.00 | 349.0 | 7.9 | 1.032 | 0.035 | 1.8 | 24.0 | 44.0 | 25.7 |
| 13.00 | 493.6 | 4.5 | 0.787 | 0.043 | 1.0 | 106.0 | 109.0 | 108.5 |
| 14.00 | 1389.6 | 6.4 | 0.802 | 0.047 | 2.0 | 108.0 | 216.0 | 111.3 |
| 15.00 | 2625.1 | 8.1 | 0.828 | 0.048 | 3.0 | 110.0 | 325.0 | 114.1 |

NOTES:

Project
Project No.
Sheet No. 3 of 3
Calculated by DWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Routing Channel - BW = 60'

CROSS SECTION PARAMETERS: FILENAME: RB60.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 8 | Bed Slope: | 0.01700 | Max Elev: | 15.5 |
| Bank Stations.....Left: | 101.5 | Right....: | 166.5 | Min Elev: | 10.0 |
| Encroachment Stations..Left: | 48.5 | Right....: | 219.5 | | |
| Manning-n Values.....LOB: | 0.055 | CHANNEL..: | 0.035 | ROB.....: | 0.055 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 15.5 | 48.5 | 2) | 12.5 | 51.5 | 3) | 12.5 | 101.5 | 4) | 10.0 | 104.0 |
| 5) | 10.0 | 164.0 | 6) | 12.5 | 166.5 | 7) | 12.5 | 216.5 | 8) | 15.5 | 219.5 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 11.00 | 331.1 | 5.4 | 0.964 | 0.035 | 1.0 | 62.0 | 61.0 | 62.8 |
| 12.00 | 1048.8 | 8.5 | 1.071 | 0.035 | 1.9 | 64.0 | 124.0 | 65.7 |
| 13.00 | 1475.9 | 6.2 | 0.907 | 0.040 | 1.4 | 166.0 | 239.0 | 168.5 |
| 14.00 | 3248.7 | 8.0 | 0.907 | 0.043 | 2.4 | 168.0 | 406.0 | 171.3 |
| 15.00 | 5554.9 | 9.7 | 0.926 | 0.044 | 3.4 | 170.0 | 575.0 | 174.1 |

NOTES:

Project Terravita
Project No. 44 001
Sheet No. 1 of 12
Calculated by DWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Wash 1 : Diversion #1 DR1R → Main Channel Wash 1

DR1L → Secondary Channel

CROSS SECTION PARAMETERS: FILENAME: DR1L.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 19 | Bed Slope: | 0.01700 | Max Elev: | 2206.4 |
| Bank Stations.....Left: | 1055.0 | Right....: | 1080.0 | Min Elev: | 2203.5 |
| Encroachment Stations..Left: | 925.0 | Right....: | 1145.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2206.4 | 925.0 | 2) | 2206.0 | 955.0 | 3) | 2204.0 | 990.0 | 4) | 2203.5 | 995.0 |
| 5) | 2203.5 | 1002.0 | 6) | 2204.0 | 1005.0 | 7) | 2204.9 | 1035.0 | 8) | 2204.0 | 1050.0 |
| 9) | 2203.6 | 1055.0 | 10) | 2203.6 | 1080.0 | 11) | 2204.0 | 1100.0 | 12) | 2204.4 | 1135.0 |
| 13) | 2204.6 | 1145.0 | 14) | 2204.0 | 1158.0 | 15) | 2203.3 | 1162.0 | 16) | 2203.3 | 1185.0 |
| 17) | 2204.0 | 1210.0 | 18) | 2206.0 | 1245.0 | 19) | 2207.5 | 1255.0 | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2204.00 | 48.3 | 2.4 | 0.740 | 0.038 | 0.3 | 65.0 | 20.5 | 65.1 |
| 2204.50 | 222.5 | 3.1 | 0.753 | 0.041 | 0.5 | 138.8 | 72.2 | 138.9 |
| 2205.00 | 647.2 | 4.3 | 0.799 | 0.042 | 0.9 | 172.5 | 152.0 | 172.7 |
| 2205.50 | 1330.1 | 5.5 | 0.846 | 0.042 | 1.3 | 181.3 | 240.4 | 181.4 |
| 2206.00 | 2207.9 | 6.6 | 0.882 | 0.043 | 1.8 | 190.0 | 333.3 | 190.2 |
| 2206.50 | 3134.2 | 7.2 | 0.896 | 0.043 | 2.0 | 220.0 | 437.3 | 220.2 |

NOTES:

| Stage | DR1 Right | DR1 Left | Q total |
|---|---|---|---|
| 2203.3 | 0 | 0 | 0 |
| 2203.5 | 9 | 0 | 9 |
| 2204 | 84 | 48 | 132 |
| 2204.5 | 235 | 223 | 458 |
| 2205 | 493 | 647 | 1140 |
| 2205.5 | 844 | 1330 | 2174 |
| 2206 | 1283 | 2208 | 3491 |

Project Terravita
Project No.
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Calculated by DWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Wash 1 : Diversion #1 : DR1R → Main Channel

CROSS SECTION PARAMETERS: FILENAME: DR1R.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 19 | Bed Slope: | 0.01500 | Max Elev: | 2207.5 |
| Bank Stations.....Left: | 1162.0 | Right....: | 1185.0 | Min Elev: | 2203.3 |
| Encroachment Stations..Left: | 1145.0 | Right....: | 1255.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2206.4 | 925.0 | 2) | 2206.0 | 955.0 | 3) | 2204.0 | 990.0 | 4) | 2203.5 | 995.0 |
| 5) | 2203.5 | 1002.0 | 6) | 2204.0 | 1005.0 | 7) | 2204.9 | 1035.0 | 8) | 2204.0 | 1050.0 |
| 9) | 2203.6 | 1055.0 | 10) | 2203.6 | 1080.0 | 11) | 2204.0 | 1100.0 | 12) | 2204.4 | 1135.0 |
| 13) | 2204.6 | 1145.0 | 14) | 2204.0 | 1158.0 | 15) | 2203.3 | 1162.0 | 16) | 2203.3 | 1185.0 |
| 17) | 2204.0 | 1210.0 | 18) | 2206.0 | 1245.0 | 19) | 2207.5 | 1255.0 | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2203.50 | 9.4 | 1.7 | 0.737 | 0.033 | 0.2 | 31.3 | 5.4 | 31.3 |
| 2204.00 | 83.7 | 3.2 | 0.791 | 0.036 | 0.5 | 52.0 | 26.2 | 52.1 |
| 2204.50 | 234.5 | 4.1 | 0.809 | 0.038 | 0.8 | 71.6 | 57.1 | 71.7 |
| 2205.00 | 492.8 | 5.1 | 0.837 | 0.039 | 1.2 | 82.5 | 96.1 | 82.6 |
| 2205.50 | 844.1 | 6.0 | 0.862 | 0.040 | 1.5 | 91.3 | 139.5 | 91.4 |

NOTES:

Project Terrawita
Project No.
Sheet No. 3 of 12
Calculated by JWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Wash 1 : Diversion #2 : DR2L → Wash 1a

DR2R → main Channel Wash 1

CROSS SECTION PARAMETERS: FILENAME: DR2L.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 18 | Bed Slope: | 0.01500 | Max Elev: | 2191.6 |
| Bank Stations.....Left: | 1000.0 | Right....: | 1020.0 | Min Elev: | 2189.0 |
| Encroachment Stations..Left: | 970.0 | Right....: | 1105.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2191.1 | 970.0 | 2) | 2190.0 | 995.0 | 3) | 2189.0 | 1000.0 | 4) | 2189.0 | 1020.0 |
| 5) | 2190.0 | 1022.0 | 6) | 2191.4 | 1035.0 | 7) | 2191.6 | 1060.0 | 8) | 2191.0 | 1080.0 |
| 9) | 2190.0 | 1084.0 | 10) | 2190.0 | 1086.0 | 11) | 2190.6 | 1090.0 | 12) | 2190.7 | 1105.0 |
| 13) | 2190.7 | 1150.0 | 14) | 2190.0 | 1165.0 | 15) | 2189.2 | 1170.0 | 16) | 2189.2 | 1185.0 |
| 17) | 2190.0 | 1200.0 | 18) | 2191.0 | 1225.0 | | | | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2189.20 | 8.2 | 2.0 | 0.796 | 0.031 | 0.2 | 21.4 | 4.1 | 21.5 |
| 2189.50 | 37.6 | 3.5 | 0.896 | 0.031 | 0.5 | 23.5 | 10.9 | 23.7 |
| 2190.00 | 119.2 | 5.1 | 0.958 | 0.032 | 0.9 | 27.0 | 23.5 | 27.3 |
| 2190.50 | 202.9 | 4.7 | 0.889 | 0.035 | 0.9 | 50.3 | 43.3 | 50.8 |
| 2191.00 | 360.6 | 4.6 | 0.837 | 0.038 | 0.9 | 84.0 | 78.6 | 84.6 |
| 2191.50 | 612.9 | 4.8 | 0.819 | 0.039 | 1.1 | 119.2 | 127.5 | 119.8 |

NOTES:

| Stage | DR2Right | DR2Left | Qtotal (cfs) |
|---|---|---|---|
| 2189 | 0 | 0 | 0 |
| 2189.2 | 0 | 8 | 8 |
| 2189.5 | 12 | 38 | 50 |
| 2190 | 69 | 119 | 188 |
| 2190.5 | 167 | 203 | 370 |
| 2191 | 336 | 361 | 697 |
| 2191.5 | 763 | 613 | 1376 |

Project Terrawita
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UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Wash 1 - Diversion #2 : DR2R → Wash 1a

CROSS SECTION PARAMETERS: FILENAME: DR2R.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 18 | Bed Slope: | 0.01500 | Max Elev: | 2191.0 |
| Bank Stations.....Left: | 1170.0 | Right....: | 1185.0 | Min Elev: | 2189.2 |
| Encroachment Stations..Left: | 1105.0 | Right....: | 1225.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2191.1 | 970.0 | 2) | 2190.0 | 995.0 | 3) | 2189.0 | 1000.0 | 4) | 2189.0 | 1020.0 |
| 5) | 2190.0 | 1022.0 | 6) | 2191.4 | 1035.0 | 7) | 2191.6 | 1060.0 | 8) | 2191.0 | 1080.0 |
| 9) | 2190.0 | 1084.0 | 10) | 2190.0 | 1086.0 | 11) | 2190.6 | 1090.0 | 12) | 2190.7 | 1105.0 |
| 13) | 2190.7 | 1150.0 | 14) | 2190.0 | 1165.0 | 15) | 2189.2 | 1170.0 | 16) | 2189.2 | 1185.0 |
| 17) | 2190.0 | 1200.0 | 18) | 2191.0 | 1225.0 | | | | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2189.50 | 12.2 | 2.2 | 0.765 | 0.033 | 0.3 | 22.5 | 5.6 | 22.5 |
| 2190.00 | 68.8 | 3.4 | 0.802 | 0.036 | 0.6 | 35.0 | 20.0 | 35.1 |
| 2190.50 | 167.4 | 3.9 | 0.790 | 0.039 | 0.7 | 58.2 | 43.3 | 58.3 |
| 2191.00 | 335.5 | 3.7 | 0.749 | 0.041 | 0.8 | 120.0 | 90.8 | 120.1 |
| 2191.50 | 763.4 | 5.1 | 0.796 | 0.042 | 1.3 | 120.0 | 150.8 | 120.1 |

NOTES:

Project Terravita
Project No.
Sheet No. 5 of 12
Calculated by DWD Date 3-30-9

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Split #3 - DR3R ⇒ Northwest along Main channel
DR3L ⇒ Wash 1B

CROSS SECTION PARAMETERS: FILENAME: DR3L.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 16 | Bed Slope: | 0.01700 | Max Elev: | 2141.9 |
| Bank Stations.....Left: | 995.0 | Right....: | 1005.0 | Min Elev: | 2138.5 |
| Encroachment Stations..Left: | 890.0 | Right....: | 1120.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2141.6 | 890.0 | 2) | 2141.1 | 920.0 | 3) | 2141.3 | 960.0 | 4) | 2141.7 | 975.0 |
| 5) | 2140.0 | 990.0 | 6) | 2138.5 | 995.0 | 7) | 2138.5 | 1005.0 | 8) | 2140.0 | 1010.0 |
| 9) | 2141.0 | 1020.0 | 10) | 2141.0 | 1030.0 | 11) | 2141.9 | 1055.0 | 12) | 2140.0 | 1065.0 |
| 13) | 2139.8 | 1066.0 | 14) | 2139.8 | 1076.0 | 15) | 2141.3 | 1090.0 | 16) | 2141.1 | 1120.0 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2139.00 | 20.0 | 3.4 | 0.913 | 0.032 | 0.4 | 13.3 | 5.8 | 13.5 |
| 2139.50 | 64.6 | 4.8 | 0.955 | 0.034 | 0.8 | 16.7 | 13.3 | 17.0 |
| 2140.00 | 108.6 | 4.4 | 0.889 | 0.036 | 0.8 | 32.9 | 24.8 | 33.3 |
| 2140.50 | 212.3 | 4.7 | 0.861 | 0.039 | 0.9 | 49.6 | 45.4 | 50.2 |
| 2141.00 | 383.4 | 5.2 | 0.858 | 0.040 | 1.1 | 66.3 | 74.4 | 67.0 |
| 2141.50 | 535.6 | 3.7 | 0.765 | 0.042 | 0.7 | 201.5 | 145.3 | 202.3 |

NOTES:

| STAGE | QL | QR | Total |
|---|---|---|---|
| 2136.7 | 0 | 0 | 0 |
| 2138.5 | 0 | 315 | 315 |
| 2139 | 20 | 530 | 550 |
| 2139.5 | 65 | 810 | 875 |
| 2140.0 | 110 | 1170 | 1280 |
| 2140.5 | 380 | 1595 | 1975 |

Project Terravita
Project No.
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UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Split #3

CROSS SECTION PARAMETERS: FILENAME: DR3R.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 15 | Bed Slope: | 0.01700 | Max Elev: | 2144.0 |
| Bank Stations.....Left: | 990.0 | Right....: | 1010.0 | Min Elev: | 2136.7 |
| Encroachment Stations..Left: | 935.0 | Right....: | 1115.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2141.1 | 935.0 | 2) | 2140.6 | 965.0 | 3) | 2140.0 | 970.0 | 4) | 2138.0 | 985.0 |
| 5) | 2136.7 | 990.0 | 6) | 2136.7 | 1010.0 | 7) | 2138.0 | 1015.0 | 8) | 2140.0 | 1025.0 |
| 9) | 2140.1 | 1030.0 | 10) | 2140.0 | 1035.0 | 11) | 2138.0 | 1050.0 | 12) | 2138.0 | 1060.0 |
| 13) | 2140.0 | 1065.0 | 14) | 2142.0 | 1075.0 | 15) | 2144.0 | 1115.0 | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2138.50 | 314.6 | 5.7 | 0.965 | 0.036 | 1.1 | 51.3 | 55.3 | 51.8 |
| 2139.00 | 526.8 | 6.3 | 0.958 | 0.037 | 1.3 | 62.5 | 83.8 | 63.3 |
| 2139.50 | 808.6 | 6.9 | 0.957 | 0.038 | 1.6 | 73.8 | 117.8 | 74.7 |
| 2140.00 | 1167.5 | 7.4 | 0.960 | 0.039 | 1.9 | 85.0 | 157.5 | 86.2 |
| 2140.50 | 1594.5 | 7.7 | 0.957 | 0.040 | 2.0 | 101.7 | 206.2 | 102.9 |
| 2141.00 | 2011.4 | 7.7 | 0.945 | 0.040 | 2.0 | 129.0 | 262.8 | 130.3 |

NOTES:

Project Terravita
Project No. 44-0001
Sheet No. 7 of 12
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UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

WASH 3/4 : Diversion #4 : DR4L → Wash 4
DR4R → Wash 3

CROSS SECTION PARAMETERS: FILENAME: DR4L.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 20 | Bed Slope: | 0.01800 | Max Elev: | 2264.0 |
| Bank Stations.....Left: | 965.0 | Right....: | 1044.0 | Min Elev: | 2260.0 |
| Encroachment Stations..Left: | 840.0 | Right....: | 1200.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.030 | ROB.....: | 0.040 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2263.6 | 840.0 | 2) | 2262.0 | 870.0 | 3) | 2262.0 | 880.0 | 4) | 2264.0 | 885.0 |
| 5) | 2264.0 | 965.0 | 6) | 2262.0 | 995.0 | 7) | 2260.0 | 1000.0 | 8) | 2260.0 | 1028.0 |
| 9) | 2262.0 | 1030.0 | 10) | 2263.0 | 1044.0 | 11) | 2262.1 | 1115.0 | 12) | 2262.9 | 1200.0 |
| 13) | 2262.1 | 1230.0 | 14) | 2260.0 | 1245.0 | 15) | 2260.0 | 1250.0 | 16) | 2261.0 | 1260.0 |
| 17) | 2260.0 | 1272.0 | 18) | 2260.0 | 1282.0 | 19) | 2262.0 | 1290.0 | 20) | 2264.0 | 1340.0 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2261.00 | 187.9 | 6.3 | 1.145 | 0.030 | 0.9 | 31.5 | 29.8 | 32.1 |
| 2261.50 | 371.9 | 8.1 | 1.214 | 0.030 | 1.4 | 33.3 | 45.9 | 34.2 |
| 2262.00 | 605.6 | 9.6 | 1.263 | 0.030 | 1.8 | 35.0 | 63.0 | 36.2 |
| 2262.50 | 528.9 | 5.0 | 1.017 | 0.033 | 0.7 | 144.2 | 106.6 | 145.5 |
| 2263.00 | 1027.9 | 5.0 | 0.960 | 0.035 | 0.8 | 251.2 | 207.6 | 252.8 |
| 2263.50 | 2138.4 | 6.3 | 0.997 | 0.036 | 1.3 | 269.4 | 337.7 | 271.0 |

NOTES:

| Stage | DR4R | DR4L | Q total |
|---|---|---|---|
| 60 | 0 | 0 | 0 |
| 61 | 106 | 188 | 294 |
| 61.5 | 261 | 372 | 633 |
| 62 | 475 | 606 | 1081 |
| 62.5 | 657 | 529 | 1186 |
| 63 | 980 | 1028 | 2008 |
| 63.5 | 1502 | 2138 | 3640 |

Project Terravita
Project No.
Sheet No. 8 of 12
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UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

WASH 3/4 : Diversion #4 : DR4R → Wash 3

CROSS SECTION PARAMETERS: FILENAME: DR4R.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 20 | Bed Slope: | 0.01600 | Max Elev: | 2264.0 |
| Bank Stations.....Left: | 1272.0 | Right....: | 1282.0 | Min Elev: | 2260.0 |
| Encroachment Stations..Left: | 1200.0 | Right....: | 1340.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.035 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2263.6 | 840.0 | 2) | 2262.0 | 870.0 | 3) | 2262.0 | 880.0 | 4) | 2264.0 | 885.0 |
| 5) | 2264.0 | 965.0 | 6) | 2262.0 | 995.0 | 7) | 2260.0 | 1000.0 | 8) | 2260.0 | 1028.0 |
| 9) | 2262.0 | 1030.0 | 10) | 2263.0 | 1044.0 | 11) | 2262.1 | 1115.0 | 12) | 2262.9 | 1200.0 |
| 13) | 2262.1 | 1230.0 | 14) | 2260.0 | 1245.0 | 15) | 2260.0 | 1250.0 | 16) | 2261.0 | 1260.0 |
| 17) | 2260.0 | 1272.0 | 18) | 2260.0 | 1282.0 | 19) | 2262.0 | 1290.0 | 20) | 2264.0 | 1340.0 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2261.00 | 106.3 | 3.4 | 0.733 | 0.042 | 0.7 | 48.1 | 31.6 | 48.4 |
| 2261.50 | 261.4 | 4.6 | 0.784 | 0.042 | 1.1 | 53.7 | 57.0 | 54.1 |
| 2262.00 | 475.2 | 5.6 | 0.819 | 0.043 | 1.4 | 59.3 | 85.3 | 59.8 |
| 2262.50 | 656.8 | 5.4 | 0.810 | 0.043 | 1.4 | 87.5 | 121.4 | 88.0 |
| 2263.00 | 979.6 | 5.7 | 0.815 | 0.043 | 1.5 | 115.0 | 172.7 | 115.5 |
| 2263.50 | 1502.2 | 6.4 | 0.838 | 0.044 | 1.8 | 127.5 | 233.4 | 128.0 |

NOTES:

Project Tarmuita
Project No. 44-0001
Sheet No. 9 of 12
Calculated by DWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

WASH 4 : Diversion #5 : DR5L → Wash 4
DR5R → Wash 4A

CROSS SECTION PARAMETERS: FILENAME: DR5L.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 19 | Bed Slope: | 0.01800 | Max Elev: | 2237.1 |
| Bank Stations.....Left: | 1080.0 | Right....: | 1110.0 | Min Elev: | 2235.0 |
| Encroachment Stations..Left: | 875.0 | Right....: | 1115.0 | | |
| Manning-n Values.....LOB: | 0.035 | CHANNEL..: | 0.030 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2237.1 | 875.0 | 2) | 2237.1 | 925.0 | 3) | 2236.0 | 935.0 | 4) | 2235.4 | 940.0 |
| 5) | 2236.0 | 945.0 | 6) | 2236.8 | 955.0 | 7) | 2236.8 | 970.0 | 8) | 2236.0 | 985.0 |
| 9) | 2235.4 | 995.0 | 10) | 2235.4 | 1007.0 | 11) | 2236.0 | 1008.0 | 12) | 2236.6 | 1025.0 |
| 13) | 2236.7 | 1055.0 | 14) | 2236.5 | 1080.0 | 15) | 2236.0 | 1089.0 | 16) | 2235.0 | 1092.0 |
| 17) | 2235.0 | 1105.0 | 18) | 2236.0 | 1110.0 | 19) | 2236.1 | 1115.0 | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2235.50 | 24.1 | 2.7 | 0.916 | 0.031 | 0.3 | 32.5 | 8.9 | 32.7 |
| 2236.00 | 128.0 | 4.2 | 0.984 | 0.032 | 0.6 | 54.0 | 30.5 | 54.5 |
| 2236.50 | 328.7 | 4.7 | 0.988 | 0.033 | 0.7 | 102.3 | 70.6 | 102.9 |
| 2237.00 | 762.2 | 5.0 | 0.996 | 0.034 | 0.8 | 189.1 | 150.9 | 189.7 |
| 2237.50 | 1656.4 | 6.2 | 1.043 | 0.034 | 1.1 | 240.0 | 265.9 | 240.7 |

NOTES:

| Stage | DR5R | DR5L | Q total |
|---|---|---|---|
| 34.6 | 0 | 0 | 0 |
| 35 | 11 | 0 | 11 |
| 35.5 | 47 | 24 | 71 |
| 36 | 76 | 128 | 204 |
| 36.5 | 336 | 329 | 665 |
| 37 | 788 | 762 | 1550 |
| 37.5 | 1382 | 1656 | 3038 |

Project Terravista
Project No. 44-0001
Sheet No. 10 of 12
Calculated by DWD Date 2/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

WASH 4 : Diversion #5 DA5R → Wash 4A

CROSS SECTION PARAMETERS: FILENAME: DR5R.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 10 | Bed Slope: | 0.01600 | Max Elev: | 2236.1 |
| Bank Stations.....Left: | 994.0 | Right....: | 1003.0 | Min Elev: | 2234.6 |
| Encroachment Stations..Left: | 925.0 | Right....: | 1060.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.035 | ROB.....: | 0.050 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2236.1 | 925.0 | 2) | 2236.0 | 940.0 | 3) | 2236.0 | 975.0 | 4) | 2235.4 | 985.0 |
| 5) | 2234.6 | 994.0 | 6) | 2234.6 | 1003.0 | 7) | 2235.7 | 1005.0 | 8) | 2235.9 | 1029.0 |
| 9) | 2236.0 | 1060.0 | 10) | 2236.2 | 1105.0 | | | | | | |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2235.00 | 11.0 | 2.4 | 0.728 | 0.038 | 0.3 | 14.2 | 4.6 | 14.3 |
| 2235.50 | 46.6 | 3.5 | 0.772 | 0.039 | 0.6 | 21.3 | 13.4 | 21.6 |
| 2236.00 | 75.9 | 2.3 | 0.661 | 0.043 | 0.4 | 85.0 | 32.7 | 85.3 |
| 2236.50 | 336.0 | 3.4 | 0.694 | 0.045 | 0.7 | 135.0 | 99.4 | 135.3 |
| 2237.00 | 788.1 | 4.7 | 0.748 | 0.046 | 1.2 | 135.0 | 166.9 | 135.3 |
| 2237.50 | 1381.5 | 5.9 | 0.788 | 0.046 | 1.7 | 135.0 | 234.4 | 135.3 |

NOTES:

Project Terravita
Project No.
Sheet No. 11 of 12
Calculated by DWD Date 4/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Split Analysis for secondary channel along Wash 1

CROSS SECTION PARAMETERS: FILENAME: 30-38L.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 20 | Bed Slope: | 0.01700 | Max Elev: | 2180.6 |
| Bank Stations.....Left: | 966.0 | Right....: | 990.0 | Min Elev: | 2178.0 |
| Encroachment Stations..Left: | 940.0 | Right....: | 1071.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.035 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2180.5 | 940.0 | 2) | 2180.0 | 956.0 | 3) | 2178.0 | 966.0 | 4) | 2178.4 | 979.0 |
| 5) | 2178.0 | 990.0 | 6) | 2178.5 | 1015.0 | 7) | 2178.8 | 1030.0 | 8) | 2179.4 | 1042.0 |
| 9) | 2180.0 | 1050.0 | 10) | 2180.6 | 1071.0 | 11) | 2180.0 | 1119.0 | 12) | 2179.2 | 1124.0 |
| 13) | 2178.2 | 1158.0 | 14) | 2180.0 | 1180.0 | 15) | 2181.0 | 1210.0 | 16) | 2180.0 | 1228.0 |
| 17) | 2179.0 | 1237.0 | 18) | 2180.0 | 1247.0 | 19) | 2180.2 | 1282.0 | 20) | 2182.0 | 1311.0 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2178.50 | 28.7 | 2.0 | 0.686 | 0.040 | 0.3 | 51.5 | 14.1 | 51.6 |
| 2179.00 | 160.2 | 3.5 | 0.771 | 0.041 | 0.6 | 73.0 | 46.1 | 73.1 |
| 2179.50 | 402.2 | 4.7 | 0.823 | 0.042 | 1.0 | 84.8 | 85.7 | 85.0 |
| 2180.00 | 750.1 | 5.8 | 0.861 | 0.042 | 1.4 | 94.0 | 130.4 | 94.3 |
| 2180.50 | 1095.9 | 5.9 | 0.861 | 0.042 | 1.5 | 127.5 | 185.8 | 127.8 |
| 2181.00 | 1766.4 | 7.0 | 0.895 | 0.042 | 1.9 | 131.0 | 251.1 | 131.3 |

NOTES:

| | L (%) | R (%) | Total |
|---|---|---|---|
| 2178.5 | 29 | 3 | 32 |
| 79.0 | 160 | 41 | 201 |
| 79.5 | 402 | 153 | 555 |
| 80 | 750(68) | 357(32) | 1107 |
| 80.5 | 1096(65) | 593(35) | 1689 |
| 81 | 1766(59) | 1238(41) | 3004 |

for $Q_T$ = 1700 cfs %L = 65+/- ≥ 1105 cfs
%R = 35+/- 595 cfs

Project Terravita
Project No.
Sheet No. 12 of 12
Calculated by DWD Date 4/93

UNIFORM FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

Flow Split Analysis for Secondary Channel along Wash 1

CROSS SECTION PARAMETERS: FILENAME: 30-38R.SEC

| | | | | | |
|---|---|---|---|---|---|
| No. of Cross Section Points: | 20 | Bed Slope: | 0.01700 | Max Elev: | 2182.0 |
| Bank Stations.....Left: | 1124.0 | Right....: | 1158.0 | Min Elev: | 2178.2 |
| Encroachment Stations..Left: | 1071.0 | Right....: | 1311.0 | | |
| Manning-n Values.....LOB: | 0.045 | CHANNEL..: | 0.035 | ROB.....: | 0.045 |

CROSS SECTION POINTS:

| No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. | No. | Elev. | Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | 2180.5 | 940.0 | 2) | 2180.0 | 956.0 | 3) | 2178.0 | 966.0 | 4) | 2178.4 | 979.0 |
| 5) | 2178.0 | 990.0 | 6) | 2178.5 | 1015.0 | 7) | 2178.8 | 1030.0 | 8) | 2179.4 | 1042.0 |
| 9) | 2180.0 | 1050.0 | 10) | 2180.6 | 1071.0 | 11) | 2180.0 | 1119.0 | 12) | 2179.2 | 1124.0 |
| 13) | 2178.2 | 1158.0 | 14) | 2180.0 | 1180.0 | 15) | 2181.0 | 1210.0 | 16) | 2180.0 | 1228.0 |
| 17) | 2179.0 | 1237.0 | 18) | 2180.0 | 1247.0 | 19) | 2180.2 | 1282.0 | 20) | 2182.0 | 1311.0 |

COMPUTED PARAMETERS:

| WSEL | Q(cfs) | V(fps) | Fr No. | ne | D(ft) | TW(ft) | A(sf) | WP(ft) |
|---|---|---|---|---|---|---|---|---|
| 2178.50 | 3.0 | 1.4 | 0.658 | 0.038 | 0.2 | 13.9 | 2.1 | 13.9 |
| 2179.00 | 41.2 | 2.8 | 0.775 | 0.038 | 0.4 | 37.0 | 14.8 | 37.0 |
| 2179.50 | 152.9 | 3.8 | 0.828 | 0.038 | 0.7 | 61.3 | 40.2 | 61.4 |
| 2180.00 | 357.4 | 4.7 | 0.859 | 0.039 | 0.9 | 80.0 | 75.5 | 80.3 |
| 2180.50 | 593.1 | 4.1 | 0.801 | 0.041 | 0.8 | 183.8 | 146.2 | 184.1 |
| 2181.00 | 1238.1 | 5.0 | 0.827 | 0.042 | 1.1 | 223.9 | 249.8 | 224.2 |

NOTES:

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 385          KK    R102
 386          KM    ROUTE C100 TO C102
 387          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 388          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 389          KM      OVERBANKS = 40':(TYPICAL)
 390          RS       1    ELEV      10
 391          RC    .055    .035    .055    1580    .018
 392          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 393          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 394          KK    S102
 395          KM    SUB-BASIN S102: ON-SITE
 396          BA    .014
 397          LS              85
 398          UD    .235

 399          KK    C102
 400          KM       COMBINE R102 & S102
 401          HC       2

 402          KK    C103
 403          KM       COMBINE C92 & C102:WASH 6
 404          HC       2

 405          KK    S150
 406          KM    SUB-BASIN S150: ON-SITE
 407          BA    .020
 408          LS              86
 409          UD

 410          KK    S140
 411          KM    SUB-BASIN S140: ON-SITE
 412          BA    .031
 413          LS              86
 414          UD

 415          KK    S110
 416          KM   SUB-BASIN S110: ON-SITE
 417          BA    .109
 418          LS              83
 419          UD    .345

 420          KK    NULL
 421          HC       3

 422          KK    S120
 423          KM   SUB-BASIN S120: ON-SITE
 424          BA    .052
 425          LS              85
 426          UD    .302
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
  .
 427          KK     S28
 428          KM    SUB-BASIN S28: ON-SITE
 429          BA    .081
 430          LS              83
 431          UD    .294

 432          KK    NULL
 433          HC       2
 434          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
               .
               .
  27           .         S16
               .           .
               .           .
  32           .           .         S20
               .           .           V
               .           .           V
  37           .           .         R20
               .           .           .
               .           .           .
  46           .           .           .         S24
               .           .           .           .
               .           .           .           .
  51         C24.................................
               .
               .
  56           .------->   DIV1L
  54       DIV1R
               .
               .
  61           .           .<-------   DIV1L
  59           .       RET1L
               .           .
               .           .
  64           .           .------->   DIV2L
  62           .       DIV2R
               .           .
               .           .
  67         C25............
               V
               V
  70         R25
               .
               .
  79           .          S8
               .           .
               .           .
  84           .           .         S10
               .           .           .
               .           .           .
  89           .           .           .         S12
               .           .           .           .
               .           .           .           .
  94           .           .           .           .         S13
               .           .           .           .           .
               .           .           .           .           .
  99         C13.............................................
               .
               .
 105           .------->   DIV3L
 102       DIV3R
               .
               .
 110           .           .<-------   DIV2L
 108           .       RET2L
               .           V
               .           V
```

```
111          .        R2L
             .         .
             .         .
120          .         .        S26
             .         .         .
             .         .         .
125          .        C26.........
             .         .
             .         .
128       NULL.........
             .
             .
130          .        S30
             .         V
             .         V
135          .        R30
             .         .
             .         .
144          .         .        S32
             .         .         .
             .         .         .
149          .        C32.........
             .         .
             .         .
152          .         .        S40
             .         .         V
             .         .         V
157          .         .        R48
             .         .         .
             .         .         .
165          .         .         .        S50
             .         .         .         .
             .         .         .         .
170          .         .        C51.........
             .         .         V
             .         .         V
173          .         .        R51
             .         .         .
             .         .         .
182          .         .         .        S54
             .         .         .         .
             .         .         .         .
187          .        C54.......................
             .         V
             .         V
190          .        R54
             .         .
             .         .
199          .         .        S56
             .         .         .
             .         .         .
204          .        C56.........
             .         .
             .         .
207       NULL.........
             .
             .
209          .        S60
             .         .
             .         .
216          .         .------->  DIV4L
214          .       DIV4R
             .         .
             .         .
219          .         .        S70
             .         .         .
```

```
                .          .          .
224             .        C70............
                .          V
                .          V
227             .        R70
                .          .
                .          .
236             .          .        S62
                .          .          .
                .          .          .
241             .        C62............
                .          .
                .          .
244          NULL............
                .
                .
248             .          .<-------  DIV4L
246             .      RET4L
                .          .
                .          .
249             .          .        S64
                .          .          .
                .          .          .
254             .        C64............
                .          .
                .          .
259             .          .------->  DIV5L
257             .      DIV5R
                .          V
                .          V
262             .        R5R
                .          .
                .          .
271             .          .        S66
                .          .          .
                .          .          .
276             .        C66............
                .          .
                .          .
279          NULL............
                .
                .
283             .          .<-------  DIV5L
281             .      RET5L
                .          V
                .          V
284             .        R5L
                .          .
                .          .
293             .          .        S68
                .          .          .
                .          .          .
298             .        C68............
                .          .
                .          .
301          NULL............
                .
                .
303             .        S80
                .          V
                .          V
308             .        R80
                .          .
                .          .
317             .          .        S82
                .          .          .
```

```
322          C82............
325     NULL............
327          S92
332                    S90
                        V
                        V
337                    R90
346          C92............
349                    S94
                        V
                        V
354                    R94
363                            S100
                                  V
                                  V
368                            R100
377                                          S101
382                    C100......................
                        V
                        V
385                    R102
394                            S102
399                    C102............
402          C103............
405                    S150
410                            S140
415                                          S110
420                    NULL......................
422                            S120
427                                           S28
```

```
                .          .          .          .          .
  432           .          .          .       NULL...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  03/31/1993  TIME  17:24:55 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    DWP2E
                    DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
                    2 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1    0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     2    0  ENDING DATE
                   NDTIME       0055  ENDING TIME
                   ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT

   JP         MULTI-PLAN OPTION
                    NPLAN          1  NUMBER OF PLANS

   JR         MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
               1.00       .99       .98       .97       .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| OPERATION | STATION | AREA | PLAN | | RATIOS APPLIED TO PRECIPITATION RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 104. | 102. | 100. | 99. | 98. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 40. | 40. | 39. | 38. | 38. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 634. | 625. | 616. | 606. | 602. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 633. | 623. | 613. | 604. | 599. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.47 | 11.46 | 11.45 | 11.43 | 11.42 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S24 | .03 | 1 | FLOW | 8. | 7. | 7. | 7. | 7. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.11 | 1 | FLOW | 647. | 637. | 627. | 617. | 613. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.11 | 1 | FLOW | 340. | 334. | 328. | 322. | 319. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.11 | 1 | FLOW | 306. | 303. | 299. | 295. | 294. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 340. | 334. | 328. | 322. | 319. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 189. | 187. | 184. | 181. | 180. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 151. | 148. | 144. | 141. | 140. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| 2 COMBINED AT | | | | | | | | | |
| + | C25 | 2.11 | 1 | FLOW | 457. | 451. | 443. | 437. | 433. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R25 | 2.11 | 1 | FLOW | 449. | 442. | 435. | 427. | 424. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 11.20 | 11.19 | 11.17 | 11.16 | 11.16 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S8 | .03 | 1 | FLOW | 30. | 29. | 29. | 28. | 28. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S10 | .37 | 1 | FLOW | 240. | 236. | 232. | 228. | 226. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S12 | .03 | 1 | FLOW | 33. | 32. | 32. | 31. | 31. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S13 | .03 | 1 | FLOW | 15. | 15. | 14. | 14. | 14. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 5 COMBINED AT | | | | | | | | | |
| + | C13 | 2.57 | 1 | FLOW | 487. | 479. | 472. | 464. | 460. |
| | | | | TIME | 4.00 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV3L | 2.57 | 1 | FLOW | 15. | 14. | 13. | 13. | 12. |
| | | | | TIME | 4.00 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV3R | 2.57 | 1 | FLOW | 472. | 465. | 458. | 451. | 447. |
| | | | | TIME | 4.00 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET2L | .00 | 1 | FLOW | 189. | 187. | 184. | 181. | 180. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R2L | .00 | 1 | FLOW | 187. | 184. | 182. | 179. | 178. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 11.37 | 11.36 | 11.34 | 11.33 | 11.33 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S26 | .12 | 1 | FLOW | 17. | 17. | 16. | 15. | 15. |
| | | | | TIME | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 |
| 2 COMBINED AT | | | | | | | | | |
| + | C26 | .12 | 1 | FLOW | 193. | 190. | 188. | 185. | 183. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 2.69 | 1 | FLOW | 666. | 656. | 646. | 636. | 631. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S30 | .42 | 1 | FLOW | 244. | 241. | 237. | 234. | 232. |
| | | | | TIME | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 |
| ROUTED TO | | | | | | | | | |
| + | R30 | .42 | 1 | FLOW | 241. | 237. | 234. | 231. | 229. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 11.57 | 11.55 | 11.54 | 11.53 | 11.52 |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S32 | .07 | 1 | FLOW | 13. | 13. | 12. | 12. | 12. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C32 | .49 | 1 | FLOW | 252. | 248. | 245. | 241. | 239. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S40 | 1.60 | 1 | FLOW | 328. | 322. | 316. | 310. | 307. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| ROUTED TO | | | | | | | | | |
| + | R48 | 1.60 | 1 | FLOW | 318. | 315. | 309. | 304. | 301. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.33 | 12.32 | 12.29 | 12.26 | 12.25 |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S50 | .53 | 1 | FLOW | 248. | 244. | 240. | 237. | 235. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C51 | 2.13 | 1 | FLOW | 428. | 421. | 413. | 406. | 402. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R51 | 2.13 | 1 | FLOW | 426. | 420. | 412. | 405. | 401. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.33 | 12.31 | 12.29 | 12.26 | 12.25 |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S54 | .04 | 1 | FLOW | 11. | 11. | 11. | 10. | 10. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 3 COMBINED AT | | | | | | | | | |
| + | C54 | 2.67 | 1 | FLOW | 597. | 588. | 578. | 568. | 563. |
| | | | | TIME | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| ROUTED TO | | | | | | | | | |
| + | R54 | 2.67 | 1 | FLOW | 590. | 581. | 571. | 562. | 557. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.44 | 11.42 | 11.41 | 11.39 | 11.39 |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S56 | .17 | 1 | FLOW | 19. | 18. | 18. | 17. | 17. |
| | | | | TIME | 3.67 | 3.67 | 3.67 | 3.67 | 3.67 |
| 2 COMBINED AT | | | | | | | | | |
| + | C56 | 2.84 | 1 | FLOW | 604. | 594. | 584. | 574. | 569. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 5.53 | 1 | FLOW | 1258. | 1238. | 1217. | 1198. | 1188. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HYDROGRAPH AT | | | | | | | | | |
| + | S60 | 1.81 | 1 | FLOW | 471. | 463. | 455. | 448. | 444. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV4L | 1.81 | 1 | FLOW | 284. | 280. | 276. | 271. | 269. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV4R | 1.81 | 1 | FLOW | 187. | 183. | 180. | 176. | 174. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S70 | .03 | 1 | FLOW | 31. | 31. | 31. | 30. | 30. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | C70 | 1.84 | 1 | FLOW | 189. | 185. | 181. | 178. | 176. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R70 | 1.84 | 1 | FLOW | 184. | 180. | 177. | 173. | 172. |
| | | | | TIME | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.36 | 11.34 | 11.32 | 11.31 | 11.30 |
| | | | | TIME | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S62 | .19 | 1 | FLOW | 56. | 55. | 54. | 53. | 52. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C62 | 2.03 | 1 | FLOW | 203. | 199. | 195. | 191. | 189. |
| | | | | TIME | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.56 | 1 | FLOW | 1446. | 1422. | 1397. | 1374. | 1362. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET4L | .00 | 1 | FLOW | 284. | 280. | 276. | 271. | 269. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S64 | .02 | 1 | FLOW | 7. | 7. | 7. | 6. | 6. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C64 | .02 | 1 | FLOW | 285. | 281. | 277. | 272. | 270. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV5L | .02 | 1 | FLOW | 163. | 161. | 160. | 158. | 157. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV5R | .02 | 1 | FLOW | 122. | 119. | 117. | 114. | 113. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5R | .02 | 1 | FLOW | 121. | 119. | 116. | 114. | 113. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 11.41 | 11.39 | 11.37 | 11.36 | 11.35 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S66 | .12 | 1 | FLOW | 20. | 19. | 19. | 18. | 18. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C66 | .13 | 1 | FLOW | 125. | 123. | 120. | 118. | 117. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.70 | 1 | FLOW | 1570. | 1543. | 1516. | 1489. | 1476. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 163. | 161. | 160. | 158. | 157. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .00 | 1 | FLOW | 163. | 161. | 159. | 157. | 156. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.68 | 11.67 | 11.66 | 11.65 | 11.64 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S68 | .06 | 1 | FLOW | 11. | 11. | 10. | 10. | 10. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .06 | 1 | FLOW | 164. | 162. | 160. | 159. | 158. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.75 | 1 | FLOW | 1732. | 1704. | 1676. | 1648. | 1634. |
| | | | | TIME | 4.00 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 31. | 30. | 29. | 29. | 28. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| ROUTED TO | | | | | | | | | |
| + | R80 | .06 | 1 | FLOW | 18. | 18. | 17. | 17. | 16. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.44 | 10.43 | 10.42 | 10.41 | 10.41 |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S82 | .05 | 1 | FLOW | 17. | 17. | 17. | 16. | 16. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C82 | .11 | 1 | FLOW | 36. | 35. | 34. | 33. | 32. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.86 | 1 | FLOW | 1744. | 1715. | 1686. | 1658. | 1644. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S92 | .08 | 1 | FLOW | 32. | 32. | 31. | 30. | 30. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |

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HYDROGRAPH AT
+                S90      .06    1   FLOW        38.     37.     36.     36.     35.
                                     TIME       3.25    3.25    3.25    3.25    3.25

ROUTED TO
+                R90      .06    1   FLOW        27.     26.     25.     24.     24.
                                     TIME       3.42    3.42    3.42    3.42    3.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      10.57   10.56   10.55   10.53   10.53
                                     TIME       3.42    3.42    3.42    3.42    3.42

 2 COMBINED AT
+                C92      .15    1   FLOW        59.     58.     56.     55.     54.
                                     TIME       3.42    3.42    3.42    3.42    3.42

HYDROGRAPH AT
+                S94      .13    1   FLOW        72.     71.     69.     68.     67.
                                     TIME       3.25    3.25    3.25    3.25    3.25

ROUTED TO
+                R94      .13    1   FLOW        64.     63.     61.     60.     59.
                                     TIME       3.33    3.33    3.33    3.33    3.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      10.96   10.95   10.93   10.92   10.91
                                     TIME       3.33    3.33    3.33    3.33    3.33

HYDROGRAPH AT
+                S100     .15    1   FLOW        78.     76.     74.     73.     72.
                                     TIME       3.25    3.25    3.25    3.25    3.25

ROUTED TO
+                R100     .15    1   FLOW        76.     74.     73.     71.     70.
                                     TIME       3.33    3.33    3.33    3.33    3.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.06   11.05   11.04   11.02   11.01
                                     TIME       3.33    3.33    3.33    3.33    3.33

HYDROGRAPH AT
+                S101     .05    1   FLOW        19.     18.     18.     17.     17.
                                     TIME       3.33    3.33    3.33    3.42    3.42

 3 COMBINED AT
+                C100     .33    1   FLOW       159.    156.    152.    148.    146.
                                     TIME       3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                R102     .33    1   FLOW       153.    150.    146.    143.    141.
                                     TIME       3.42    3.42    3.42    3.42    3.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.62   11.60   11.58   11.55   11.54
                                     TIME       3.42    3.42    3.42    3.42    3.42

HYDROGRAPH AT
+                S102     .01    1   FLOW         6.      6.      6.      6.      6.
                                     TIME       3.33    3.33    3.33    3.33    3.33

 2 COMBINED AT
+                C102     .34    1   FLOW       159.    155.    152.    148.    146.
                                     TIME       3.42    3.42    3.42    3.42    3.42

 2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | C103 | .49 | 1 | FLOW | 218. | 213. | 208. | 203. | 201. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S150 | .02 | 1 | FLOW | 20. | 19. | 19. | 18. | 18. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S140 | .03 | 1 | FLOW | 30. | 30. | 29. | 28. | 28. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S110 | .11 | 1 | FLOW | 31. | 30. | 30. | 29. | 29. |
| | | | | TIME | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 |
| 3 COMBINED AT | | | | | | | | | |
| + | NULL | .16 | 1 | FLOW | 53. | 52. | 51. | 49. | 49. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S120 | .05 | 1 | FLOW | 20. | 19. | 19. | 18. | 18. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S28 | .08 | 1 | FLOW | 26. | 25. | 24. | 24. | 23. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | .13 | 1 | FLOW | 45. | 44. | 43. | 42. | 42. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |

*** NORMAL END OF HEC-1 ***

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990             *
*             VERSION 4.0               *
*                                       *
*  RUN DATE  03/31/1993  TIME  17:24:55 *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        DWP2E
  2           ID        DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
  3           ID        2 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT       5                     300
 19           IO       5       0
 20           JR    PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                   0.39     .71    1.14    1.27    1.36    1.53
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK     S24
  47          KM    SUB-BASIN S24: ON-SITE
  48          BA    .034
  49          LS              80
  50          UD    .297

  51          KK     C24
  52          KM     COMBINE S14, S16, S20/R20, & S24
  53          HC       4

  54          KK   DIV1R
  55          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  56          DT   DIV1L
  57          DI      0.      9.    132.    458.   1140.   2174.   3491.
  58          DQ      0.      0.     48.    223.    647.   1330.   2208.

  59          KK   RET1L
  60          KM    RETRIEVE DIV1L
  61          DR   DIV1L

  62          KK   DIV2R
  63          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  64          DT   DIV2L
  65          DI      0.      8.     50.    188.    370.    697.   1376.
  66          DQ      0.      8.     38.    119.    203.    361.    613.

  67          KK     C25
  68          KM    COMBINE DIV1R & DIV2R
  69          HC       2

  70          KK     R25
  71          KM    ROUTE C25 THRU S13
  72          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  73          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  74          KM      OVERBANKS = 50':(TYPICAL)
  75          RS       1    ELEV      10
  76          RC    .055    .035    .055    3550    .017
  77          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
  78          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

  79          KK      S8
  80          KM    SUB-BASIN S8: OFF-SITE
  81          BA    .031
  82          LS              85     26.
  83          UD    .110

  84          KK     S10
  85          KM    SUB-BASIN S10: OFF-SITE
  86          BA    .368
  87          LS              87     19.
  88          UD    .252
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  89          KK     S12
  90          KM    SUB-BASIN S12: OFF-SITE
  91          BA    .034
  92          LS              85     32.
  93          UD    .127

  94          KK     S13
  95          KM    SUB-BASIN S13: ON-SITE
  96          BA    .034
  97          LS              87
  98          UD    .324

  99          KK     C13
 100          KM     COMBINE S8, S10, S12, S13, & R25: WASH 1
 101          HC       5

 102          KK   DIV3R
 103          KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
 104          KM              DIV2L - WASH 1B
 105          DT   DIV3L
 106          DI      0.    315.    550.    875.   1280.   1975.
 107          DQ      0.     0.1     20.     65.    110.    380.

 108          KK   RET2L
 109          KM     RETRIEVE DIV2L
 110          DR   DIV2L

 111          KK     R2L
 112          KM     ROUTE DIV2L THRU S26
 113          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 114          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 115          KM      OVERBANKS = 40':(TYPICAL)
 116          RS       2    ELEV      10
 117          RC    .055    .035    .055    3850    .017
 118          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 119          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 120          KK     S26
 121          KM    SUB-BASIN S26: ON-SITE
 122          BA    .119
 123          LS              77
 124          UD    .343

 125          KK     C26
 126          KM    COMBINE R2L & S26: WASH 1A
 127          HC       2

 128          KK    NULL
 129          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 130          KK     S30
 131          KM    SUB-BASIN S30: OFF-SITE
 132          BA     .42
 133          LS              88     38.
 134          UD    .452

 135          KK     R30
 136          KM    ROUTE S30 THRU S32: WASH 2A
 137          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 138          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 139          KM      OVERBANKS = 40':(TYPICAL)
 140          RS       1    ELEV      10
 141          RC    .055    .035    .055    2250    .018
 142          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 143          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 144          KK     S32
 145          KM    SUB-BASIN S32: ON-SITE
 146          BA    .074
 147          LS              78
 148          UD    .287

 149          KK     C32
 150          KM    COMBINE S30/R30 & S32: WASH 2A
 151          HC       2

 152          KK     S40
 153          KM    SUB-BASIN S40: OFF-SITE
 154          BA    1.60
 155          LS              84     15.
 156          UD    .985

 157          KK     R48
 158          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 159          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 160          KM      OVERBANKS = 40':(TYPICAL)
 161          RS       2    ELEV      10
 162          RC    .055    .035    .055    8400    .023
 163          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 164          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 165          KK     S50
 166          KM    SUB-BASIN S50: OFF-SITE
 167          BA     .53
 168          LS              86     35.
 169          UD    .535

 170          KK     C51
 171          KM    COMBINE R48/S40 & S50: WASH 2
 172          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 173          KK     R51
 174          KM    ROUTE C51 THRU BASIN 54: WASH 2
 175          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 176          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 177          KM      OVERBANKS = 40':(TYPICAL)
 178          RS       2    ELEV      10
 179          RC    .055    .035    .055    3050    .015
 180          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 181          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 182          KK     S54
 183          KM    SUB-BASIN S54: ON-SITE
 184          BA    .044
 185          LS              81
 186          UD    .291

 187          KK     C54
 188          KM    COMBINE S54, C51, C32: WASH 2
 189          HC       3

 190          KK     R54
 191          KM    ROUTE C54 THRU BASIN 56: WASH 2
 192          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 193          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 194          KM      OVERBANKS = 50':(TYPICAL)
 195          RS       2    ELEV      10
 196          RC    .055    .035    .055    4150    .016
 197          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 198          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 199          KK     S56
 200          KM    SUB-BASIN S56: ON-SITE
 201          BA    .171
 202          LS              76
 203          UD    .427

 204          KK     C56
 205          KM    COMBINE S56 & R54: WASH 2
 206          HC       2

 207          KK    NULL
 208          HC       2

 209          KK     S60
 210          KM    SUB-BASIN S60: OFF-SITE
 211          BA    1.81
 212          LS              87     16.
 213          UD    .933
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 214          KK   DIV4R
 215          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 216          DT   DIV4L
 217          DI      0.    294.    633.   1081.   1186.   2008.
 218          DQ      0.    188.    372.    606.    530.   1028.

 219          KK     S70
 220          KM    SUB-BASIN S70: OFF-SITE
 221          BA    .029
 222          LS              85     40.
 223          UD    .120

 224          KK     C70
 225          KM    COMBINE DIV4R & S70: WASH 3
 226          HC       2

 227          KK     R70
 228          KM    ROUTE C70 THRU S62
 229          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 230          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 231          KM      OVERBANKS = 40':(TYPICAL)
 232          RS       3    ELEV      10
 233          RC    .055    .035    .055    6850    .017
 234          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 235          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 236          KK     S62
 237          KM    SUB-BASIN S62: ON-SITE
 238          BA    .193
 239          LS              85
 240          UD    .458

 241          KK     C62
 242          KM    COMBINE S62 & C70: WASH 3
 243          HC       2

 244          KK    NULL
 245          HC       2

 246          KK   RET4L
 247          KM    RETRIEVE DIV4L: WASH 4
 248          DR   DIV4L

 249          KK     S64
 250          KM    SUB-BASIN S64: ON-SITE
 251          BA    .017
 252          LS              84
 253          UD    .224
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 254          KK     C64
 255          KM    COMBINE DIV4L & S64: WASH 4
 256          HC       2

 257          KK   DIV5R
 258          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 259          DT   DIV5L
 260          DI      0.      11.      71.     204.     665.    1556.    3038.
 261          DQ      0.       0.      24.     128.     329.     762.    1656.

 262          KK     R5R
 263          KM    ROUTE DIV5R THRU S66: WASH 4A
 264          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 265          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 266          KM      OVERBANKS = 40':(TYPICAL)
 267          RS       1    ELEV      10
 268          RC    .055    .035    .055    1470    .018
 269          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 270          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 271          KK     S66
 272          KM    SUB-BASIN S66: ON-SITE
 273          BA    .115
 274          LS              77
 275          UD    .230

 276          KK     C66
 277          KM    COMBINE S66 & R5R: WASH 4A
 278          HC       2

 279          KK    NULL
 280          HC       2

 281          KK   RET5L
 282          KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
 283          DR   DIV5L

 284          KK     R5L
 285          KM    ROUTE DIV5L THRU S68: WASH 4
 286          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 287          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 288          KM      OVERBANKS = 40':(TYPICAL)
 289          RS       1    ELEV      10
 290          RC    .055    .035    .055    1750    .018
 291          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 292          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 293          KK     S68
 294          KM    SUB-BASIN S68: ON-SITE
 295          BA    .056
 296          LS              76
 297          UD    .128
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 298          KK     C68
 299          KM    COMBINE S68 & R5L: WASH 4
 300          HC       2

 301          KK    NULL
 302          HC       2

 303          KK     S80
 304          KM    SUB-BASIN S80: OFF-SITE
 305          BA    .058
 306          LS              85
 307          UD    .166

 308          KK     R80
 309          KM    ROUTE S80 THRU S82:
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 40':(TYPICAL)
 313          RS       1    ELEV      10
 314          RC    .055    .035    .055    3590    .018
 315          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 316          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     S82
 318          KM    SUB-BASIN S82: ON-SITE
 319          BA    .052
 320          LS              84
 321          UD    .316

 322          KK     C82
 323          KM    COMBINE S82 & R80:
 324          HC       2

 325          KK    NULL
 326          HC       2

 327          KK     S92
 328          KM    SUB-BASIN S92: ON-SITE
 329          BA    .083
 330          LS              85
 331          UD    .283

 332          KK     S90
 333          KM    SUB-BASIN S90: OFF-SITE
 334          BA    .063
 335          LS              86
 336          UD    .152

 337          KK     R90
 338          KM    ROUTE S90 THRU S92
 339          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 340          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 341          KM      OVERBANKS = 40':(TYPICAL)
 342          RS       2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 343          RC    .055    .035    .055    3500    .018
 344          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 345          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 346          KK     C92
 347          KM    COMBINE S92 & R90:
 348          HC       2

 349          KK     S94
 350          KM    SUB-BASIN S94: OFF-SITE
 351          BA    .132
 352          LS              86
 353          UD    .186

 354          KK     R94
 355          KM    ROUTE S94 TO C100
 356          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 357          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 358          KM      OVERBANKS = 40':(TYPICAL)
 359          RS       1    ELEV      10
 360          RC    .055    .035    .055    1950    .018
 361          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 362          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 363          KK    S100
 364          KM    SUB-BASIN S100: OFF-SITE
 365          BA    .148
 366          LS              86
 367          UD    .196

 368          KK    R100
 369          KM    ROUTE S100 TO C100
 370          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 371          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 372          KM      OVERBANKS = 40':(TYPICAL)
 373          RS       1    ELEV      10
 374          RC    .055    .035    .055    1320    .018
 375          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 376          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 377          KK    S101
 378          KM    SUB-BASIN S101: ON-SITE
 379          BA    .047
 380          LS              85
 381          UD    .272

 382          KK    C100
 383          KM       COMBINE R94, R100 & S101
 384          HC       3
```

# APPENDIX B - HEC-1 MODEL: EXISTING CONDITIONS

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990             *
*             VERSION 4.0               *
*                                       *
*  RUN DATE  03/31/1993  TIME  17:23:21 *
*                                       *
*****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        OWP10E
  2           ID        DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
  3           ID        10 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT       5                    300
 19           IO       5       0
 20           JR     PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                    0.56    1.02    1.65    1.87    2.01    2.29
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK     S24
  47          KM    SUB-BASIN S24: ON-SITE
  48          BA    .034
  49          LS              80
  50          UD    .297

  51          KK     C24
  52          KM     COMBINE S14, S16, S20/R20, & S24
  53          HC       4

  54          KK   DIV1R
  55          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  56          DT   DIV1L
  57          DI      0.      9.    132.    458.   1140.   2174.   3491.
  58          DQ      0.      0.     48.    223.    647.   1330.   2208.

  59          KK   RET1L
  60          KM    RETRIEVE DIV1L
  61          DR   DIV1L

  62          KK   DIV2R
  63          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  64          DT   DIV2L
  65          DI      0.      8.     50.    188.    370.    697.   1376.
  66          DQ      0.      8.     38.    119.    203.    361.    613.

  67          KK     C25
  68          KM    COMBINE DIV1R & DIV2R
  69          HC       2

  70          KK     R25
  71          KM    ROUTE C25 THRU S13
  72          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  73          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  74          KM      OVERBANKS = 50':(TYPICAL)
  75          RS       1    ELEV      10
  76          RC    .055    .035    .055    3550    .017
  77          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
  78          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

  79          KK      S8
  80          KM    SUB-BASIN S8: OFF-SITE
  81          BA    .031
  82          LS              85     26.
  83          UD    .110

  84          KK     S10
  85          KM    SUB-BASIN S10: OFF-SITE
  86          BA    .368
  87          LS              87     19.
  88          UD    .252
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 89           KK     S12
 90           KM    SUB-BASIN S12: OFF-SITE
 91           BA    .034
 92           LS              85     32.
 93           UD    .127

 94           KK     S13
 95           KM    SUB-BASIN S13: ON-SITE
 96           BA    .034
 97           LS              87
 98           UD    .324

 99           KK     C13
100           KM     COMBINE S8, S10, S12, S13, & R25: WASH 1
101           HC       5

102           KK   DIV3R
103           KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
104           KM              DIV2L - WASH 1B
105           DT   DIV3L
106           DI      0.    315.    550.    875.   1280.   1975.
107           DQ      0.     0.1     20.     65.    110.    380.

108           KK   RET2L
109           KM     RETRIEVE DIV2L
110           DR   DIV2L

111           KK     R2L
112           KM     ROUTE DIV2L THRU S26
113           KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
114           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
115           KM      OVERBANKS = 40':(TYPICAL)
116           RS       2    ELEV      10
117           RC    .055    .035    .055    3850    .017
118           RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
119           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

120           KK     S26
121           KM    SUB-BASIN S26: ON-SITE
122           BA    .119
123           LS              77
124           UD    .343

125           KK     C26
126           KM    COMBINE R2L & S26: WASH 1A
127           HC       2

128           KK    NULL
129           HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 130          KK     S30
 131          KM    SUB-BASIN S30: OFF-SITE
 132          BA     .42
 133          LS              88     38.
 134          UD    .452

 135          KK     R30
 136          KM    ROUTE S30 THRU S32: WASH 2A
 137          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 138          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 139          KM      OVERBANKS = 40':(TYPICAL)
 140          RS       1    ELEV      10
 141          RC    .055    .035    .055    2250    .018
 142          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 143          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 144          KK     S32
 145          KM    SUB-BASIN S32: ON-SITE
 146          BA    .074
 147          LS              78
 148          UD    .287

 149          KK     C32
 150          KM    COMBINE S30/R30 & S32: WASH 2A
 151          HC       2

 152          KK     S40
 153          KM    SUB-BASIN S40: OFF-SITE
 154          BA    1.60
 155          LS              84     15.
 156          UD    .985

 157          KK     R48
 158          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 159          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 160          KM      OVERBANKS = 40':(TYPICAL)
 161          RS       2    ELEV      10
 162          RC    .055    .035    .055    8400    .023
 163          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 164          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 165          KK     S50
 166          KM    SUB-BASIN S50: OFF-SITE
 167          BA     .53
 168          LS              86     35.
 169          UD    .535

 170          KK     C51
 171          KM    COMBINE R48/S40 & S50: WASH 2
 172          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 173          KK     R51
 174          KM    ROUTE C51 THRU BASIN 54: WASH 2
 175          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 176          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 177          KM      OVERBANKS = 40':(TYPICAL)
 178          RS       2    ELEV      10
 179          RC    .055    .035    .055    3050    .015
 180          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 181          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 182          KK     S54
 183          KM    SUB-BASIN S54: ON-SITE
 184          BA    .044
 185          LS              81
 186          UD    .291

 187          KK     C54
 188          KM    COMBINE S54, C51, C32: WASH 2
 189          HC       3

 190          KK     R54
 191          KM    ROUTE C54 THRU BASIN 56: WASH 2
 192          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 193          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 194          KM      OVERBANKS = 50':(TYPICAL)
 195          RS       2    ELEV      10
 196          RC    .055    .035    .055    4150    .016
 197          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 198          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 199          KK     S56
 200          KM    SUB-BASIN S56: ON-SITE
 201          BA    .171
 202          LS              76
 203          UD    .427

 204          KK     C56
 205          KM    COMBINE S56 & R54: WASH 2
 206          HC       2

 207          KK    NULL
 208          HC       2

 209          KK     S60
 210          KM    SUB-BASIN S60: OFF-SITE
 211          BA    1.81
 212          LS              87     16.
 213          UD    .933
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 214          KK   DIV4R
 215          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 216          DT   DIV4L
 217          DI      0.    294.    633.   1081.   1186.   2008.
 218          DQ      0.    188.    372.    606.    530.   1028.

 219          KK     S70
 220          KM    SUB-BASIN S70: OFF-SITE
 221          BA    .029
 222          LS              85     40.
 223          UD    .120

 224          KK     C70
 225          KM    COMBINE DIV4R & S70: WASH 3
 226          HC       2

 227          KK     R70
 228          KM    ROUTE C70 THRU S62
 229          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 230          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 231          KM      OVERBANKS = 40':(TYPICAL)
 232          RS       3    ELEV      10
 233          RC    .055    .035    .055    6850    .017
 234          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 235          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 236          KK     S62
 237          KM    SUB-BASIN S62: ON-SITE
 238          BA    .193
 239          LS              85
 240          UD    .458

 241          KK     C62
 242          KM    COMBINE S62 & C70: WASH 3
 243          HC       2

 244          KK    NULL
 245          HC       2

 246          KK   RET4L
 247          KM    RETRIEVE DIV4L: WASH 4
 248          DR   DIV4L

 249          KK     S64
 250          KM    SUB-BASIN S64: ON-SITE
 251          BA    .017
 252          LS              84
 253          UD    .224
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 254          KK     C64
 255          KM    COMBINE DIV4L & S64: WASH 4
 256          HC       2

 257          KK   DIV5R
 258          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 259          DT   DIV5L
 260          DI      0.      11.      71.     204.     665.    1556.    3038.
 261          DQ      0.       0.      24.     128.     329.     762.    1656.

 262          KK     R5R
 263          KM    ROUTE DIV5R THRU S66: WASH 4A
 264          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 265          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 266          KM      OVERBANKS = 40':(TYPICAL)
 267          RS       1    ELEV      10
 268          RC    .055    .035    .055    1470    .018
 269          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 270          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 271          KK     S66
 272          KM    SUB-BASIN S66: ON-SITE
 273          BA    .115
 274          LS              77
 275          UD    .230

 276          KK     C66
 277          KM    COMBINE S66 & R5R: WASH 4A
 278          HC       2

 279          KK    NULL
 280          HC       2

 281          KK   RET5L
 282          KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
 283          DR   DIV5L

 284          KK     R5L
 285          KM    ROUTE DIV5L THRU S68: WASH 4
 286          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 287          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 288          KM      OVERBANKS = 40':(TYPICAL)
 289          RS       1    ELEV      10
 290          RC    .055    .035    .055    1750    .018
 291          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 292          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 293          KK     S68
 294          KM    SUB-BASIN S68: ON-SITE
 295          BA    .056
 296          LS              76
 297          UD    .128
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 298          KK     C68
 299          KM    COMBINE S68 & R5L: WASH 4
 300          HC       2

 301          KK    NULL
 302          HC       2

 303          KK     S80
 304          KM    SUB-BASIN S80: OFF-SITE
 305          BA    .058
 306          LS              85
 307          UD    .166

 308          KK     R80
 309          KM    ROUTE S80 THRU S82:
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 40':(TYPICAL)
 313          RS       1    ELEV      10
 314          RC    .055    .035    .055    3590    .018
 315          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 316          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     S82
 318          KM    SUB-BASIN S82: ON-SITE
 319          BA    .052
 320          LS              84
 321          UD    .316

 322          KK     C82
 323          KM    COMBINE S82 & R80:
 324          HC       2

 325          KK    NULL
 326          HC       2

 327          KK     S92
 328          KM    SUB-BASIN S92: ON-SITE
 329          BA    .083
 330          LS              85
 331          UD    .283

 332          KK     S90
 333          KM    SUB-BASIN S90: OFF-SITE
 334          BA    .063
 335          LS              86
 336          UD    .152

 337          KK     R90
 338          KM    ROUTE S90 THRU S92
 339          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 340          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 341          KM      OVERBANKS = 40':(TYPICAL)
 342          RS       2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 343          RC    .055    .035    .055    3500    .018
 344          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 345          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 346          KK    C92
 347          KM   COMBINE S92 & R90:
 348          HC      2

 349          KK    S94
 350          KM   SUB-BASIN S94: OFF-SITE
 351          BA   .132
 352          LS             86
 353          UD   .186

 354          KK    R94
 355          KM   ROUTE S94 TO C100
 356          KM     BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 357          KM     DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 358          KM     OVERBANKS = 40':(TYPICAL)
 359          RS      1    ELEV      10
 360          RC   .055    .035    .055    1950    .018
 361          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 362          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 363          KK   S100
 364          KM   SUB-BASIN S100: OFF-SITE
 365          BA   .148
 366          LS             86
 367          UD   .196

 368          KK   R100
 369          KM   ROUTE S100 TO C100
 370          KM     BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 371          KM     DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 372          KM     OVERBANKS = 40':(TYPICAL)
 373          RS      1    ELEV      10
 374          RC   .055    .035    .055    1320    .018
 375          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 376          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 377          KK   S101
 378          KM   SUB-BASIN S101: ON-SITE
 379          BA   .047
 380          LS             85
 381          UD   .272

 382          KK   C100
 383          KM       COMBINE R94, R100 & S101
 384          HC      3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 385          KK    R102
 386          KM    ROUTE C100 TO C102
 387          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 388          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 389          KM      OVERBANKS = 40':(TYPICAL)
 390          RS       1    ELEV      10
 391          RC    .055    .035    .055    1580    .018
 392          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 393          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 394          KK    S102
 395          KM    SUB-BASIN S102: ON-SITE
 396          BA    .014
 397          LS              85
 398          UD    .235

 399          KK    C102
 400          KM       COMBINE R102 & S102
 401          HC       2

 402          KK    C103
 403          KM       COMBINE C92 & C102:WASH 6
 404          HC       2

 405          KK    S150
 406          KM    SUB-BASIN S150: ON-SITE
 407          BA    .020
 408          LS              86
 409          UD

 410          KK    S140
 411          KM    SUB-BASIN S140: ON-SITE
 412          BA    .031
 413          LS              86
 414          UD

 415          KK    S110
 416          KM   SUB-BASIN S110: ON-SITE
 417          BA    .109
 418          LS              83
 419          UD    .345

 420          KK    NULL
 421          HC       3

 422          KK    S120
 423          KM   SUB-BASIN S120: ON-SITE
 424          BA    .052
 425          LS              85
 426          UD    .302
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 427          KK     S28
 428          KM    SUB-BASIN S28: ON-SITE
 429          BA    .081
 430          LS              83
 431          UD    .294

 432          KK    NULL
 433          HC       2
 434          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
               .
               .
  27           .         S16
               .           .
               .           .
  32           .           .         S20
               .           .           V
               .           .           V
  37           .           .         R20
               .           .           .
               .           .           .
  46           .           .           .         S24
               .           .           .           .
               .           .           .           .
  51         C24.................................
               .
               .
  56           .-------->   DIV1L
  54       DIV1R
               .
               .
  61           .           .<-------   DIV1L
  59           .       RET1L
               .           .
               .           .
  64           .           .-------->   DIV2L
  62           .       DIV2R
               .           .
               .           .
  67         C25............
               V
               V
  70         R25
               .
               .
  79           .          S8
               .           .
               .           .
  84           .           .         S10
               .           .           .
               .           .           .
  89           .           .           .         S12
               .           .           .           .
               .           .           .           .
  94           .           .           .           .         S13
               .           .           .           .           .
               .           .           .           .           .
  99         C13.............................................
               .
               .
 105           .-------->   DIV3L
 102       DIV3R
               .
               .
 110           .           .<-------   DIV2L
 108           .       RET2L
               .           V
               .           V
```

```
111          .        R2L
             .         .
             .         .
120          .         .        S26
             .         .         .
             .         .         .
125          .        C26............
             .         .
             .         .
128       NULL............
             .
             .
130          .        S30
             .         V
             .         V
135          .        R30
             .         .
             .         .
144          .         .        S32
             .         .         .
             .         .         .
149          .        C32............
             .         .
             .         .
152          .         .        S40
             .         .         V
             .         .         V
157          .         .        R48
             .         .         .
             .         .         .
165          .         .         .        S50
             .         .         .         .
             .         .         .         .
170          .         .        C51............
             .         .         V
             .         .         V
173          .         .        R51
             .         .         .
             .         .         .
182          .         .         .        S54
             .         .         .         .
             .         .         .         .
187          .        C54........................
             .         V
             .         V
190          .        R54
             .         .
             .         .
199          .         .        S56
             .         .         .
             .         .         .
204          .        C56............
             .         .
             .         .
207       NULL............
             .
             .
209          .        S60
             .         .
             .         .
216          .         .-------->  DIV4L
214          .      DIV4R
             .         .
             .         .
219          .         .        S70
             .         .         .
```

```
            .          .          .
224         .        C70............
            .          V
            .          V
227         .        R70
            .          .
            .          .
236         .          .        S62
            .          .          .
            .          .          .
241         .        C62............
            .          .
            .          .
244       NULL............
            .
            .
248         .          .<-------  DIV4L
246         .      RET4L
            .          .
            .          .
249         .          .        S64
            .          .          .
            .          .          .
254         .        C64............
            .          .
            .          .
259         .          .------->  DIV5L
257         .      DIV5R
            .          V
            .          V
262         .        R5R
            .          .
            .          .
271         .          .        S66
            .          .          .
            .          .          .
276         .        C66............
            .          .
            .          .
279       NULL............
            .
            .
283         .          .<-------  DIV5L
281         .      RET5L
            .          V
            .          V
284         .        R5L
            .          .
            .          .
293         .          .        S68
            .          .          .
            .          .          .
298         .        C68............
            .          .
            .          .
301       NULL............
            .
            .
303         .        S80
            .          V
            .          V
308         .        R80
            .          .
            .          .
317         .          .        S82
            .          .          .
```

```
322          C82............
325     NULL............
327          S92
332                  S90
                      V
                      V
337                  R90
346          C92............
349                  S94
                      V
                      V
354                  R94
363                          S100
                                V
                                V
368                          R100
377                                          S101
382                  C100......................
                      V
                      V
385                  R102
394                          S102
399                  C102............
402          C103............
405                  S150
410                          S140
415                                          S110
420                  NULL......................
422                          S120
427                                           S28
```

```
                .          .          .          .          .
 432            .          .          .       NULL...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990             *
*             VERSION 4.0               *
*                                       *
*  RUN DATE  03/31/1993  TIME  17:23:21 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
                    DWP10E
                    DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
                    10 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1   0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      2   0  ENDING DATE
                   NDTIME       0055  ENDING TIME
                    ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

   JP         MULTI-PLAN OPTION
                    NPLAN          1  NUMBER OF PLANS

   JR         MULTI-RATIO OPTION
                RATIOS OF PRECIPITATION
               1.00      .99       .98       .97       .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| OPERATION | STATION | AREA | PLAN | | RATIOS APPLIED TO PRECIPITATION RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 180. | 177. | 175. | 172. | 171. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 70. | 69. | 68. | 67. | 67. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 1105. | 1090. | 1074. | 1059. | 1051. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 1102. | 1087. | 1071. | 1056. | 1049. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.06 | 12.04 | 12.02 | 12.00 | 12.00 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S24 | .03 | 1 | FLOW | 20. | 20. | 19. | 19. | 19. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.11 | 1 | FLOW | 1130. | 1114. | 1098. | 1082. | 1074. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.11 | 1 | FLOW | 641. | 631. | 621. | 611. | 606. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.11 | 1 | FLOW | 489. | 483. | 477. | 471. | 468. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 641. | 631. | 621. | 611. | 606. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 334. | 329. | 324. | 319. | 317. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 307. | 302. | 297. | 292. | 289. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| 2 COMBINED AT | | | | | | | | | |
| + | C25 | 2.11 | 1 | FLOW | 796. | 785. | 774. | 763. | 757. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R25 | 2.11 | 1 | FLOW | 786. | 775. | 764. | 754. | 748. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 11.68 | 11.66 | 11.65 | 11.63 | 11.63 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S8 | .03 | 1 | FLOW | 53. | 53. | 52. | 51. | 51. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S10 | .37 | 1 | FLOW | 437. | 431. | 424. | 418. | 415. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S12 | .03 | 1 | FLOW | 57. | 57. | 56. | 55. | 55. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S13 | .03 | 1 | FLOW | 31. | 30. | 30. | 29. | 29. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 5 COMBINED AT | | | | | | | | | |
| + | C13 | 2.57 | 1 | FLOW | 868. | 856. | 844. | 832. | 826. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV3L | 2.57 | 1 | FLOW | 64. | 62. | 61. | 59. | 58. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV3R | 2.57 | 1 | FLOW | 804. | 793. | 783. | 773. | 768. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET2L | .00 | 1 | FLOW | 334. | 329. | 324. | 319. | 317. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R2L | .00 | 1 | FLOW | 331. | 327. | 322. | 317. | 315. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 11.93 | 11.92 | 11.90 | 11.88 | 11.87 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S26 | .12 | 1 | FLOW | 51. | 50. | 49. | 47. | 47. |
| | | | | TIME | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 |
| 2 COMBINED AT | | | | | | | | | |
| + | C26 | .12 | 1 | FLOW | 349. | 343. | 338. | 333. | 331. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 2.69 | 1 | FLOW | 1153. | 1137. | 1121. | 1106. | 1098. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S30 | .42 | 1 | FLOW | 409. | 404. | 398. | 393. | 390. |
| | | | | TIME | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 |
| ROUTED TO | | | | | | | | | |
| + | R30 | .42 | 1 | FLOW | 405. | 399. | 394. | 389. | 386. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 12.14 | 12.12 | 12.11 | 12.09 | 12.08 |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S32 | .07 | 1 | FLOW | 38. | 37. | 36. | 36. | 35. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C32 | .49 | 1 | FLOW | 434. | 428. | 422. | 416. | 413. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S40 | 1.60 | 1 | FLOW | 640. | 629. | 619. | 608. | 603. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R48 | 1.60 | 1 | FLOW | 585. | 575. | 564. | 552. | 546. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.95 | 12.94 | 12.92 | 12.90 | 12.89 |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S50 | .53 | 1 | FLOW | 426. | 420. | 414. | 408. | 405. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C51 | 2.13 | 1 | FLOW | 723. | 715. | 707. | 700. | 695. |
| | | | | TIME | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| ROUTED TO | | | | | | | | | |
| + | R51 | 2.13 | 1 | FLOW | 705. | 696. | 687. | 678. | 673. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.93 | 12.92 | 12.90 | 12.89 | 12.88 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S54 | .04 | 1 | FLOW | 28. | 28. | 27. | 26. | 26. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 3 COMBINED AT | | | | | | | | | |
| + | C54 | 2.67 | 1 | FLOW | 1010. | 996. | 983. | 970. | 963. |
| | | | | TIME | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| ROUTED TO | | | | | | | | | |
| + | R54 | 2.67 | 1 | FLOW | 1003. | 989. | 976. | 963. | 957. |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.98 | 11.96 | 11.94 | 11.93 | 11.92 |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S56 | .17 | 1 | FLOW | 59. | 58. | 56. | 55. | 54. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C56 | 2.84 | 1 | FLOW | 1047. | 1032. | 1018. | 1004. | 997. |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 5.53 | 1 | FLOW | 2180. | 2150. | 2120. | 2091. | 2076. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HYDROGRAPH AT | | | | | | | | | |
| + | S60 | 1.81 | 1 | FLOW | 875. | 862. | 849. | 836. | 829. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV4L | 1.81 | 1 | FLOW | 499. | 492. | 485. | 478. | 475. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV4R | 1.81 | 1 | FLOW | 377. | 370. | 364. | 358. | 355. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S70 | .03 | 1 | FLOW | 53. | 53. | 52. | 51. | 51. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | C70 | 1.84 | 1 | FLOW | 380. | 373. | 367. | 361. | 358. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R70 | 1.84 | 1 | FLOW | 374. | 368. | 361. | 355. | 352. |
| | | | | TIME | 4.17 | 4.25 | 4.25 | 4.25 | 4.25 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.08 | 12.06 | 12.04 | 12.02 | 12.01 |
| | | | | TIME | 4.17 | 4.25 | 4.25 | 4.25 | 4.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S62 | .19 | 1 | FLOW | 122. | 120. | 118. | 116. | 115. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C62 | 2.03 | 1 | FLOW | 420. | 413. | 405. | 398. | 394. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.56 | 1 | FLOW | 2568. | 2531. | 2494. | 2458. | 2440. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET4L | .00 | 1 | FLOW | 499. | 492. | 485. | 478. | 475. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S64 | .02 | 1 | FLOW | 15. | 15. | 15. | 15. | 14. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C64 | .02 | 1 | FLOW | 501. | 494. | 487. | 480. | 476. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV5L | .02 | 1 | FLOW | 257. | 254. | 251. | 248. | 247. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV5R | .02 | 1 | FLOW | 243. | 239. | 235. | 232. | 230. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5R | .02 | 1 | FLOW | 243. | 239. | 235. | 231. | 229. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 12.13 | 12.11 | 12.09 | 12.07 | 12.06 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S66 | .12 | 1 | FLOW | 62. | 61. | 59. | 58. | 57. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C66 | .13 | 1 | FLOW | 253. | 249. | 245. | 241. | 239. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.70 | 1 | FLOW | 2820. | 2779. | 2738. | 2698. | 2678. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 257. | 254. | 251. | 248. | 247. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .00 | 1 | FLOW | 257. | 254. | 251. | 248. | 246. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.20 | 12.19 | 12.17 | 12.16 | 12.15 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S68 | .06 | 1 | FLOW | 36. | 35. | 34. | 33. | 33. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .06 | 1 | FLOW | 261. | 258. | 254. | 251. | 250. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.75 | 1 | FLOW | 3078. | 3034. | 2990. | 2947. | 2925. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 66. | 65. | 64. | 63. | 62. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| ROUTED TO | | | | | | | | | |
| + | R80 | .06 | 1 | FLOW | 46. | 45. | 44. | 43. | 43. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.78 | 10.77 | 10.76 | 10.75 | 10.75 |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S82 | .05 | 1 | FLOW | 39. | 38. | 38. | 37. | 37. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C82 | .11 | 1 | FLOW | 85. | 84. | 82. | 80. | 80. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.86 | 1 | FLOW | 3101. | 3057. | 3012. | 2969. | 2947. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S92 | .08 | 1 | FLOW | 71. | 69. | 68. | 67. | 66. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |

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HYDROGRAPH AT
+                    S90       .06    1   FLOW          78.      77.      75.      74.      73.
                                          TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                    R90       .06    1   FLOW          64.      62.      61.      59.      59.
                                          TIME        3.33     3.33     3.33     3.33     3.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       10.96    10.94    10.93    10.92    10.91
                                          TIME        3.33     3.33     3.33     3.33     3.33

 2 COMBINED AT
+                    C92       .15    1   FLOW         134.     132.     129.     126.     125.
                                          TIME        3.33     3.33     3.33     3.33     3.33

HYDROGRAPH AT
+                    S94       .13    1   FLOW         153.     150.     147.     145.     144.
                                          TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                    R94       .13    1   FLOW         142.     140.     137.     135.     133.
                                          TIME        3.33     3.33     3.33     3.33     3.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       11.55    11.53    11.52    11.50    11.49
                                          TIME        3.33     3.33     3.33     3.33     3.33

HYDROGRAPH AT
+                   S100       .15    1   FLOW         166.     163.     160.     157.     156.
                                          TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                   R100       .15    1   FLOW         160.     157.     155.     152.     151.
                                          TIME        3.33     3.33     3.33     3.33     3.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       11.66    11.65    11.63    11.61    11.60
                                          TIME        3.33     3.33     3.33     3.33     3.33

HYDROGRAPH AT
+                   S101       .05    1   FLOW          41.      41.      40.      39.      39.
                                          TIME        3.33     3.33     3.33     3.33     3.33

 3 COMBINED AT
+                   C100       .33    1   FLOW         344.     338.     332.     326.     322.
                                          TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                   R102       .33    1   FLOW         318.     313.     308.     303.     301.
                                          TIME        3.42     3.42     3.42     3.42     3.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       12.47    12.45    12.43    12.41    12.40
                                          TIME        3.42     3.42     3.42     3.42     3,33

HYDROGRAPH AT
+                   S102       .01    1   FLOW          13.      13.      13.      13.      12.
                                          TIME        3.33     3.33     3.33     3.33     3.33

 2 COMBINED AT
+                   C102       .34    1   FLOW         329.     324.     319.     315.     313.
                                          TIME        3.42     3.42     3.33     3.33     3.33

 2 COMBINED AT
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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | C103 | .49 | 1 | FLOW | 462. | 455. | 448. | 441. | 438. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S150 | .02 | 1 | FLOW | 41. | 40. | 40. | 39. | 39. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S140 | .03 | 1 | FLOW | 64. | 63. | 62. | 61. | 60. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S110 | .11 | 1 | FLOW | 73. | 71. | 70. | 68. | 68. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 3 COMBINED AT | | | | | | | | | |
| + | NULL | .16 | 1 | FLOW | 117. | 115. | 112. | 110. | 109. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S120 | .05 | 1 | FLOW | 43. | 42. | 41. | 40. | 40. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S28 | .08 | 1 | FLOW | 59. | 58. | 57. | 56. | 55. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | .13 | 1 | FLOW | 102. | 100. | 98. | 96. | 95. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |

*** NORMAL END OF HEC-1 ***

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*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990             *
*             VERSION 4.0               *
*                                       *
* RUN DATE  03/31/1993  TIME  17:24:02  *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX        XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        DWP25E
  2           ID        DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
  3           ID        25 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT      5                     300
 19           IO      5       0
 20           JR    PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                    0.65    1.18    1.90    2.17    2.34    2.68
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK     S24
  47          KM    SUB-BASIN S24: ON-SITE
  48          BA    .034
  49          LS              80
  50          UD    .297

  51          KK     C24
  52          KM     COMBINE S14, S16, S20/R20, & S24
  53          HC       4

  54          KK   DIV1R
  55          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  56          DT   DIV1L
  57          DI      0.      9.    132.    458.   1140.   2174.   3491.
  58          DQ      0.      0.     48.    223.    647.   1330.   2208.

  59          KK   RET1L
  60          KM    RETRIEVE DIV1L
  61          DR   DIV1L

  62          KK   DIV2R
  63          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  64          DT   DIV2L
  65          DI      0.      8.     50.    188.    370.    697.   1376.
  66          DQ      0.      8.     38.    119.    203.    361.    613.

  67          KK     C25
  68          KM    COMBINE DIV1R & DIV2R
  69          HC       2

  70          KK     R25
  71          KM    ROUTE C25 THRU S13
  72          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  73          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  74          KM      OVERBANKS = 50':(TYPICAL)
  75          RS       1    ELEV      10
  76          RC    .055    .035    .055    3550    .017
  77          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
  78          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

  79          KK      S8
  80          KM    SUB-BASIN S8: OFF-SITE
  81          BA    .031
  82          LS              85     26.
  83          UD    .110

  84          KK     S10
  85          KM    SUB-BASIN S10: OFF-SITE
  86          BA    .368
  87          LS              87     19.
  88          UD    .252
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 89           KK     S12
 90           KM    SUB-BASIN S12: OFF-SITE
 91           BA    .034
 92           LS              85      32.
 93           UD    .127

 94           KK     S13
 95           KM    SUB-BASIN S13: ON-SITE
 96           BA    .034
 97           LS              87
 98           UD    .324

 99           KK     C13
100           KM     COMBINE S8, S10, S12, S13, & R25: WASH 1
101           HC       5

102           KK   DIV3R
103           KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
104           KM              DIV2L - WASH 1B
105           DT   DIV3L
106           DI      0.    315.    550.    875.   1280.   1975.
107           DQ      0.     0.1     20.     65.    110.    380.

108           KK   RET2L
109           KM     RETRIEVE DIV2L
110           DR   DIV2L

111           KK     R2L
112           KM     ROUTE DIV2L THRU S26
113           KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
114           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
115           KM      OVERBANKS = 40':(TYPICAL)
116           RS       2    ELEV      10
117           RC    .055    .035    .055    3850    .017
118           RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
119           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

120           KK     S26
121           KM    SUB-BASIN S26: ON-SITE
122           BA    .119
123           LS              77
124           UD    .343

125           KK     C26
126           KM    COMBINE R2L & S26: WASH 1A
127           HC       2

128           KK    NULL
129           HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 130          KK     S30
 131          KM    SUB-BASIN S30: OFF-SITE
 132          BA     .42
 133          LS              88     38.
 134          UD    .452

 135          KK     R30
 136          KM    ROUTE S30 THRU S32: WASH 2A
 137          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 138          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 139          KM      OVERBANKS = 40':(TYPICAL)
 140          RS       1    ELEV      10
 141          RC    .055    .035    .055    2250    .018
 142          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 143          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 144          KK     S32
 145          KM    SUB-BASIN S32: ON-SITE
 146          BA    .074
 147          LS              78
 148          UD    .287

 149          KK     C32
 150          KM    COMBINE S30/R30 & S32: WASH 2A
 151          HC       2

 152          KK     S40
 153          KM    SUB-BASIN S40: OFF-SITE
 154          BA    1.60
 155          LS              84     15.
 156          UD    .985

 157          KK     R48
 158          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 159          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 160          KM      OVERBANKS = 40':(TYPICAL)
 161          RS       2    ELEV      10
 162          RC    .055    .035    .055    8400    .023
 163          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 164          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 165          KK     S50
 166          KM    SUB-BASIN S50: OFF-SITE
 167          BA     .53
 168          LS              86     35.
 169          UD    .535

 170          KK     C51
 171          KM    COMBINE R48/S40 & S50: WASH 2
 172          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 173          KK     R51
 174          KM    ROUTE C51 THRU BASIN 54: WASH 2
 175          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 176          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 177          KM      OVERBANKS = 40':(TYPICAL)
 178          RS       2    ELEV      10
 179          RC    .055    .035    .055    3050    .015
 180          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 181          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 182          KK     S54
 183          KM    SUB-BASIN S54: ON-SITE
 184          BA    .044
 185          LS              81
 186          UD    .291

 187          KK     C54
 188          KM    COMBINE S54, C51, C32: WASH 2
 189          HC       3

 190          KK     R54
 191          KM    ROUTE C54 THRU BASIN 56: WASH 2
 192          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 193          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 194          KM      OVERBANKS = 50':(TYPICAL)
 195          RS       2    ELEV      10
 196          RC    .055    .035    .055    4150    .016
 197          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 198          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 199          KK     S56
 200          KM    SUB-BASIN S56: ON-SITE
 201          BA    .171
 202          LS              76
 203          UD    .427

 204          KK     C56
 205          KM    COMBINE S56 & R54: WASH 2
 206          HC       2

 207          KK    NULL
 208          HC       2

 209          KK     S60
 210          KM    SUB-BASIN S60: OFF-SITE
 211          BA    1.81
 212          LS              87     16.
 213          UD    .933
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 214          KK   DIV4R
 215          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 216          DT   DIV4L
 217          DI      0.    294.    633.   1081.   1186.   2008.
 218          DQ      0.    188.    372.    606.    530.   1028.

 219          KK     S70
 220          KM    SUB-BASIN S70: OFF-SITE
 221          BA    .029
 222          LS              85     40.
 223          UD    .120

 224          KK     C70
 225          KM    COMBINE DIV4R & S70: WASH 3
 226          HC       2

 227          KK     R70
 228          KM    ROUTE C70 THRU S62
 229          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 230          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 231          KM      OVERBANKS = 40':(TYPICAL)
 232          RS       3    ELEV      10
 233          RC    .055    .035    .055    6850    .017
 234          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 235          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 236          KK     S62
 237          KM    SUB-BASIN S62: ON-SITE
 238          BA    .193
 239          LS              85
 240          UD    .458

 241          KK     C62
 242          KM    COMBINE S62 & C70: WASH 3
 243          HC       2

 244          KK    NULL
 245          HC       2

 246          KK   RET4L
 247          KM    RETRIEVE DIV4L: WASH 4
 248          DR   DIV4L

 249          KK     S64
 250          KM    SUB-BASIN S64: ON-SITE
 251          BA    .017
 252          LS              84
 253          UD    .224
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 254          KK     C64
 255          KM    COMBINE DIV4L & S64: WASH 4
 256          HC       2

 257          KK   DIV5R
 258          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 259          DT   DIV5L
 260          DI      0.     11.     71.    204.    665.   1556.   3038.
 261          DQ      0.      0.     24.    128.    329.    762.   1656.

 262          KK     R5R
 263          KM    ROUTE DIV5R THRU S66: WASH 4A
 264          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 265          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 266          KM      OVERBANKS = 40':(TYPICAL)
 267          RS       1    ELEV      10
 268          RC    .055    .035    .055    1470    .018
 269          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 270          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 271          KK     S66
 272          KM    SUB-BASIN S66: ON-SITE
 273          BA    .115
 274          LS              77
 275          UD    .230

 276          KK     C66
 277          KM    COMBINE S66 & R5R: WASH 4A
 278          HC       2

 279          KK    NULL
 280          HC       2

 281          KK   RET5L
 282          KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
 283          DR   DIV5L

 284          KK     R5L
 285          KM    ROUTE DIV5L THRU S68: WASH 4
 286          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 287          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 288          KM      OVERBANKS = 40':(TYPICAL)
 289          RS       1    ELEV      10
 290          RC    .055    .035    .055    1750    .018
 291          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 292          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 293          KK     S68
 294          KM    SUB-BASIN S68: ON-SITE
 295          BA    .056
 296          LS              76
 297          UD    .128
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 298          KK     C68
 299          KM    COMBINE S68 & R5L: WASH 4
 300          HC       2

 301          KK    NULL
 302          HC       2

 303          KK     S80
 304          KM    SUB-BASIN S80: OFF-SITE
 305          BA    .058
 306          LS              85
 307          UD    .166

 308          KK     R80
 309          KM    ROUTE S80 THRU S82:
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 40':(TYPICAL)
 313          RS       1    ELEV      10
 314          RC    .055    .035    .055    3590    .018
 315          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 316          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     S82
 318          KM    SUB-BASIN S82: ON-SITE
 319          BA    .052
 320          LS              84
 321          UD    .316

 322          KK     C82
 323          KM    COMBINE S82 & R80:
 324          HC       2

 325          KK    NULL
 326          HC       2

 327          KK     S92
 328          KM    SUB-BASIN S92: ON-SITE
 329          BA    .083
 330          LS              85
 331          UD    .283

 332          KK     S90
 333          KM    SUB-BASIN S90: OFF-SITE
 334          BA    .063
 335          LS              86
 336          UD    .152

 337          KK     R90
 338          KM    ROUTE S90 THRU S92
 339          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 340          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 341          KM      OVERBANKS = 40':(TYPICAL)
 342          RS       2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 343          RC    .055    .035    .055    3500    .018
 344          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 345          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 346          KK     C92
 347          KM    COMBINE S92 & R90:
 348          HC       2

 349          KK     S94
 350          KM    SUB-BASIN S94: OFF-SITE
 351          BA    .132
 352          LS              86
 353          UD    .186

 354          KK     R94
 355          KM    ROUTE S94 TO C100
 356          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 357          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 358          KM      OVERBANKS = 40':(TYPICAL)
 359          RS       1    ELEV      10
 360          RC    .055    .035    .055    1950    .018
 361          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 362          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 363          KK    S100
 364          KM    SUB-BASIN S100: OFF-SITE
 365          BA    .148
 366          LS              86
 367          UD    .196

 368          KK    R100
 369          KM    ROUTE S100 TO C100
 370          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 371          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 372          KM      OVERBANKS = 40':(TYPICAL)
 373          RS       1    ELEV      10
 374          RC    .055    .035    .055    1320    .018
 375          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 376          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 377          KK    S101
 378          KM    SUB-BASIN S101: ON-SITE
 379          BA    .047
 380          LS              85
 381          UD    .272

 382          KK    C100
 383          KM       COMBINE R94, R100 & S101
 384          HC       3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 385          KK    R102
 386          KM    ROUTE C100 TO C102
 387          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 388          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 389          KM      OVERBANKS = 40':(TYPICAL)
 390          RS       1    ELEV      10
 391          RC    .055    .035    .055    1580    .018
 392          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 393          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 394          KK    S102
 395          KM    SUB-BASIN S102: ON-SITE
 396          BA    .014
 397          LS              85
 398          UD    .235

 399          KK    C102
 400          KM        COMBINE R102 & S102
 401          HC       2

 402          KK    C103
 403          KM        COMBINE C92 & C102:WASH 6
 404          HC       2

 405          KK    S150
 406          KM    SUB-BASIN S150: ON-SITE
 407          BA    .020
 408          LS              86
 409          UD

 410          KK    S140
 411          KM    SUB-BASIN S140: ON-SITE
 412          BA    .031
 413          LS              86
 414          UD

 415          KK    S110
 416          KM   SUB-BASIN S110: ON-SITE
 417          BA    .109
 418          LS              83
 419          UD    .345

 420          KK    NULL
 421          HC       3

 422          KK    S120
 423          KM   SUB-BASIN S120: ON-SITE
 424          BA    .052
 425          LS              85
 426          UD    .302
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 427          KK     S28
 428          KM    SUB-BASIN S28: ON-SITE
 429          BA    .081
 430          LS              83
 431          UD    .294

 432          KK    NULL
 433          HC       2
 434          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
               .
               .
  27           .         S16
               .           .
               .           .
  32           .           .         S20
               .           .           V
               .           .           V
  37           .           .         R20
               .           .           .
               .           .           .
  46           .           .           .         S24
               .           .           .           .
               .           .           .           .
  51         C24.................................
               .
               .
  56           .-------->   DIV1L
  54       DIV1R
               .
               .
  61           .           .<-------   DIV1L
  59           .       RET1L
               .           .
               .           .
  64           .           .-------->   DIV2L
  62           .       DIV2R
               .           .
               .           .
  67         C25............
               V
               V
  70         R25
               .
               .
  79           .          S8
               .           .
               .           .
  84           .           .         S10
               .           .           .
               .           .           .
  89           .           .           .         S12
               .           .           .           .
               .           .           .           .
  94           .           .           .           .         S13
               .           .           .           .           .
               .           .           .           .           .
  99         C13.............................................
               .
               .
 105           .-------->   DIV3L
 102       DIV3R
               .
               .
 110           .           .<-------   DIV2L
 108           .       RET2L
               .           V
               .           V
```

```
111          .        R2L
             .          .
             .          .
120          .          .        S26
             .          .          .
             .          .          .
125          .        C26............
             .          .
             .          .
128       NULL............
             .
             .
130          .        S30
             .          V
             .          V
135          .        R30
             .          .
             .          .
144          .          .        S32
             .          .          .
             .          .          .
149          .        C32............
             .          .
             .          .
152          .          .        S40
             .          .          V
             .          .          V
157          .          .        R48
             .          .          .
             .          .          .
165          .          .          .        S50
             .          .          .          .
             .          .          .          .
170          .          .        C51............
             .          .          V
             .          .          V
173          .          .        R51
             .          .          .
             .          .          .
182          .          .          .        S54
             .          .          .          .
             .          .          .          .
187          .        C54........................
             .          V
             .          V
190          .        R54
             .          .
             .          .
199          .          .        S56
             .          .          .
             .          .          .
204          .        C56............
             .          .
             .          .
207       NULL............
             .
             .
209          .        S60
             .          .
             .          .
216          .          .-------->   DIV4L
214          .      DIV4R
             .          .
             .          .
219          .          .        S70
             .          .          .
```

```
                .           .           .
224             .         C70............
                .           V
                .           V
227             .         R70
                .           .
                .           .
236             .           .         S62
                .           .           .
                .           .           .
241             .         C62............
                .           .
                .           .
244          NULL............
                .
                .
248             .           .<-------   DIV4L
246             .       RET4L
                .           .
                .           .
249             .           .         S64
                .           .           .
                .           .           .
254             .         C64............
                .           .
                .           .
259             .           .------->   DIV5L
257             .       DIV5R
                .           V
                .           V
262             .         R5R
                .           .
                .           .
271             .           .         S66
                .           .           .
                .           .           .
276             .         C66............
                .           .
                .           .
279          NULL............
                .
                .
283             .           .<-------   DIV5L
281             .       RET5L
                .           V
                .           V
284             .         R5L
                .           .
                .           .
293             .           .         S68
                .           .           .
                .           .           .
298             .         C68............
                .           .
                .           .
301          NULL............
                .
                .
303             .         S80
                .           V
                .           V
308             .         R80
                .           .
                .           .
317             .           .         S82
                .           .           .
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                .          .          .
322             .        C82...........
                .          .
                .          .
325          NULL...........
                .
                .
327             .        S92
                .          .
                .          .
332             .          .        S90
                .          .          V
                .          .          V
337             .          .        R90
                .          .          .
                .          .          .
346             .        C92...........
                .          .
                .          .
349             .          .        S94
                .          .          V
                .          .          V
354             .          .        R94
                .          .          .
                .          .          .
363             .          .          .       S100
                .          .          .          V
                .          .          .          V
368             .          .          .       R100
                .          .          .          .
                .          .          .          .
377             .          .          .          .       S101
                .          .          .          .          .
                .          .          .          .          .
382             .          .       C100.......................
                .          .          V
                .          .          V
385             .          .       R102
                .          .          .
                .          .          .
394             .          .          .       S102
                .          .          .          .
                .          .          .          .
399             .          .       C102...........
                .          .          .
                .          .          .
402             .       C103...........
                .          .
                .          .
405             .          .       S150
                .          .          .
                .          .          .
410             .          .          .       S140
                .          .          .          .
                .          .          .          .
415             .          .          .          .       S110
                .          .          .          .          .
                .          .          .          .          .
420             .          .       NULL.......................
                .          .          .
                .          .          .
422             .          .          .       S120
                .          .          .          .
                .          .          .          .
427             .          .          .          .        S28
                .          .          .          .          .
```

```
                .          .          .          .          .          .
 432            .          .          .       NULL............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  03/31/1993  TIME  17:24:02 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    DWP25E
                    DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
                    25 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT        HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1    0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     2    0  ENDING DATE
                   NDTIME       0055  ENDING TIME
                   ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

    JP        MULTI-PLAN OPTION
                    NPLAN          1  NUMBER OF PLANS

    JR        MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
                1.00      .99      .98      .97      .96
```

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      11.90    11.89    11.87    11.85    11.85
                                      TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                   S8      .03   1   FLOW         66.      65.      64.      64.      63.
                                      TIME        3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                  S10      .37   1   FLOW        542.     535.     527.     519.     515.
                                      TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                  S12      .03   1   FLOW         71.      70.      69.      68.      67.
                                      TIME        3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                  S13      .03   1   FLOW         39.      38.      38.      37.      37.
                                      TIME        3.42     3.42     3.42     3.42     3.42

  5 COMBINED AT
+                  C13     2.57   1   FLOW       1078.    1063.    1047.    1032.    1024.
                                      TIME        4.00     4.00     4.00     4.00     4.00

 DIVERSION TO
+                DIV3L     2.57   1   FLOW         88.      86.      84.      82.      82.
                                      TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                DIV3R     2.57   1   FLOW        990.     977.     963.     950.     943.
                                      TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                RET2L      .00   1   FLOW        402.     398.     393.     389.     387.
                                      TIME        4.00     4.00     4.00     4.00     4.00

 ROUTED TO
+                  R2L      .00   1   FLOW        401.     396.     392.     387.     385.
                                      TIME        4.08     4.08     4.08     4.08     4.08

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.17    12.15    12.14    12.12    12.11
                                      TIME        4.08     4.08     4.08     4.08     4.08

 HYDROGRAPH AT
+                  S26      .12   1   FLOW         72.      71.      69.      67.      67.
                                      TIME        3.42     3.42     3.42     3.42     3.42

  2 COMBINED AT
+                  C26      .12   1   FLOW        426.     421.     416.     411.     408.
                                      TIME        4.00     4.00     4.00     4.00     4.00

  2 COMBINED AT
+                 NULL     2.69   1   FLOW       1416.    1398.    1379.    1360.    1351.
                                      TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                  S30      .42   1   FLOW        495.     489.     483.     476.     473.
                                      TIME        3.50     3.50     3.50     3.50     3.50

 ROUTED TO
+                  R30      .42   1   FLOW        484.     478.     473.     467.     465.
                                      TIME        3.58     3.58     3.58     3.58     3.58

                                  ** PEAK STAGES IN FEET **
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 12.38 | 12.36 | 12.35 | 12.33 | 12.33 |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S32 | .07 | 1 | FLOW | 53. | 52. | 51. | 50. | 49. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C32 | .49 | 1 | FLOW | 523. | 517. | 511. | 504. | 502. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S40 | 1.60 | 1 | FLOW | 814. | 801. | 788. | 776. | 769. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R48 | 1.60 | 1 | FLOW | 753. | 740. | 728. | 717. | 711. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 13.19 | 13.18 | 13.16 | 13.14 | 13.13 |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S50 | .53 | 1 | FLOW. | 521. | 514. | 507. | 500. | 496. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C51 | 2.13 | 1 | FLOW | 911. | 896. | 881. | 866. | 859. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| ROUTED TO | | | | | | | | | |
| + | R51 | 2.13 | 1 | FLOW | 906. | 890. | 874. | 860. | 852. |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 13.21 | 13.19 | 13.17 | 13.15 | 13.14 |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S54 | .04 | 1 | FLOW | 38. | 37. | 37. | 36. | 35. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 3 COMBINED AT | | | | | | | | | |
| + | C54 | 2.67 | 1 | FLOW | 1260. | 1240. | 1220. | 1201. | 1192. |
| | | | | TIME | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| ROUTED TO | | | | | | | | | |
| + | R54 | 2.67 | 1 | FLOW | 1243. | 1225. | 1207. | 1189. | 1180. |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.25 | 12.23 | 12.21 | 12.19 | 12.18 |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S56 | .17 | 1 | FLOW | 85. | 83. | 81. | 79. | 78. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C56 | 2.84 | 1 | FLOW | 1304. | 1285. | 1265. | 1246. | 1236. |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 5.53 | 1 | FLOW | 2688. | 2652. | 2615. | 2579. | 2561. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HYDROGRAPH AT | | | | | | | | | |
| + | S60 | 1.81 | 1 | FLOW | 1093. | 1077. | 1061. | 1045. | 1038. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV4L | 1.81 | 1 | FLOW | 600. | 604. | 596. | 587. | 583. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV4R | 1.81 | 1 | FLOW | 495. | 473. | 466. | 458. | 454. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S70 | .03 | 1 | FLOW | 65. | 64. | 63. | 63. | 62. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | C70 | 1.84 | 1 | FLOW | 499. | 477. | 469. | 462. | 458. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R70 | 1.84 | 1 | FLOW | 476. | 464. | 458. | 453. | 450. |
| | | | | TIME | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.39 | 12.36 | 12.34 | 12.33 | 12.32 |
| | | | | TIME | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S62 | .19 | 1 | FLOW | 159. | 156. | 154. | 151. | 150. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C62 | 2.03 | 1 | FLOW | 528. | 520. | 516. | 510. | 507. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.56 | 1 | FLOW | 3196. | 3151. | 3106. | 3061. | 3038. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET4L | .00 | 1 | FLOW | 600. | 604. | 596. | 587. | 583. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S64 | .02 | 1 | FLOW | 20. | 20. | 19. | 19. | 19. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C64 | .02 | 1 | FLOW | 602. | 606. | 598. | 590. | 586. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV5L | .02 | 1 | FLOW | 302. | 303. | 300. | 296. | 294. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV5R | .02 | 1 | FLOW | 301. | 303. | 298. | 294. | 291. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5R | .02 | 1 | FLOW | 300. | 301. | 296. | 291. | 289. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 12.40 | 12.40 | 12.38 | 12.37 | 12.36 |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S66 | .12 | 1 | FLOW | 89. | 87. | 85. | 83. | 82. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C66 | .13 | 1 | FLOW | 313. | 314. | 310. | 305. | 302. |
| | | | | TIME | 4.00 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.70 | 1 | FLOW | 3504. | 3456. | 3408. | 3359. | 3335. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 302. | 303. | 300. | 296. | 294. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .00 | 1 | FLOW | 301. | 301. | 297. | 294. | 292. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.40 | 12.40 | 12.39 | 12.38 | 12.37 |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S68 | .06 | 1 | FLOW | 52. | 51. | 49. | 48. | 47. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .06 | 1 | FLOW | 305. | 305. | 302. | 298. | 297. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.75 | 1 | FLOW | 3800. | 3749. | 3698. | 3648. | 3622. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 86. | 84. | 83. | 82. | 81. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| ROUTED TO | | | | | | | | | |
| + | R80 | .06 | 1 | FLOW | 64. | 62. | 61. | 59. | 59. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.95 | 10.94 | 10.93 | 10.92 | 10.91 |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S82 | .05 | 1 | FLOW | 51. | 51. | 50. | 49. | 48. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C82 | .11 | 1 | FLOW | 113. | 111. | 109. | 107. | 106. |
| | | | | TIME | 3.33 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.86 | 1 | FLOW | 3835. | 3784. | 3733. | 3682. | 3656. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S92 | .08 | 1 | FLOW | 92. | 91. | 89. | 88. | 87. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |

```
 HYDROGRAPH AT
+                 S90       .06     1   FLOW        100.     98.     96.     95.     94.
                                       TIME        3.25    3.25    3.25    3.25    3.25

 ROUTED TO
+                 R90       .06     1   FLOW         86.     85.     83.     82.     81.
                                       TIME        3.33    3.33    3.33    3.33    3.33

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.15   11.14   11.13   11.11   11.11
                                       TIME        3.33    3.33    3.33    3.33    3.33

  2 COMBINED AT
+                 C92       .15     1   FLOW        179.    176.    172.    169.    168.
                                       TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                 S94       .13     1   FLOW        197.    194.    191.    187.    186.
                                       TIME        3.25    3.25    3.25    3.25    3.25

 ROUTED TO
+                 R94       .13     1   FLOW        184.    181.    178.    174.    173.
                                       TIME        3.33    3.33    3.33    3.33    3.33

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.81   11.79   11.77   11.75   11.75
                                       TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                 S100      .15     1   FLOW        214.    211.    207.    204.    202.
                                       TIME        3.25    3.25    3.25    3.25    3.25

 ROUTED TO
+                 R100      .15     1   FLOW        205.    202.    199.    195.    194.
                                       TIME        3.33    3.33    3.33    3.33    3.33

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.93   11.91   11.89   11.87   11.86
                                       TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                 S101      .05     1   FLOW         54.     53.     52.     51.     51.
                                       TIME        3.33    3.33    3.33    3.33    3.33

  3 COMBINED AT
+                 C100      .33     1   FLOW        443.    435.    428.    421.    417.
                                       TIME        3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                 R102      .33     1   FLOW        402.    396.    390.    384.    381.
                                       TIME        3.42    3.42    3.42    3.42    3.42

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      12.72   12.70   12.69   12.68   12.67
                                       TIME        3.42    3.42    3.42    3.42    3.42

 HYDROGRAPH AT
+                 S102      .01     1   FLOW         17.     17.     17.     16.     16.
                                       TIME        3.33    3.33    3.33    3.33    3.33

  2 COMBINED AT
+                 C102      .34     1   FLOW        417.    411.    404.    398.    395.
                                       TIME        3.42    3.42    3.42    3.42    3.42

  2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | C103 | .49 | 1 | FLOW | 590. | 581. | 572. | 562. | 558. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S150 | .02 | 1 | FLOW | 53. | 52. | 51. | 51. | 50. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S140 | .03 | 1 | FLOW | 82. | 81. | 80. | 78. | 78. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S110 | .11 | 1 | FLOW | 97. | 95. | 93. | 91. | 91. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 3 COMBINED AT | | | | | | | | | |
| + | NULL | .16 | 1 | FLOW | 154. | 151. | 148. | 146. | 144. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S120 | .05 | 1 | FLOW | 55. | 54. | 53. | 53. | 52. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S28 | .08 | 1 | FLOW | 78. | 77. | 75. | 74. | 73. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | .13 | 1 | FLOW | 133. | 131. | 129. | 126. | 125. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |

*** NORMAL END OF HEC-1 ***

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  03/31/1993  TIME  09:48:56 *
*                                      *
****************************************
```

```
*************************************
*                                   *
*   U.S. ARMY CORPS OF ENGINEERS    *
*   HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET         *
*      DAVIS, CALIFORNIA 95616      *
*          (916) 756-1104           *
*                                   *
*************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        DWP100E
  2           ID        DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
  3           ID        100 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT       5                     300
 19           IO       5       0
 20           JR    PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                    0.80    1.46    2.36    2.70    2.92    3.35
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK     S24
  47          KM    SUB-BASIN S24: ON-SITE
  48          BA    .034
  49          LS              80
  50          UD    .297

  51          KK     C24
  52          KM     COMBINE S14, S16, S20/R20, & S24
  53          HC       4

  54          KK   DIV1R
  55          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  56          DT   DIV1L
  57          DI      0.      9.    132.    458.   1140.   2174.   3491.
  58          DQ      0.      0.     48.    223.    647.   1330.   2208.

  59          KK   RET1L
  60          KM    RETRIEVE DIV1L
  61          DR   DIV1L

  62          KK   DIV2R
  63          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  64          DT   DIV2L
  65          DI      0.      8.     50.    188.    370.    697.   1376.
  66          DQ      0.      8.     38.    119.    203.    361.    613.

  67          KK     C25
  68          KM    COMBINE DIV1R & DIV2R
  69          HC       2

  70          KK     R25
  71          KM    ROUTE C25 THRU S13
  72          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  73          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  74          KM      OVERBANKS = 50':(TYPICAL)
  75          RS       1    ELEV      10
  76          RC    .055    .035    .055    3550    .017
  77          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
  78          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

  79          KK      S8
  80          KM    SUB-BASIN S8: OFF-SITE
  81          BA    .031
  82          LS              85     26.
  83          UD    .110

  84          KK     S10
  85          KM    SUB-BASIN S10: OFF-SITE
  86          BA    .368
  87          LS              87     19.
  88          UD    .252
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 89           KK     S12
 90           KM    SUB-BASIN S12: OFF-SITE
 91           BA    .034
 92           LS              85     32.
 93           UD    .127

 94           KK     S13
 95           KM    SUB-BASIN S13: ON-SITE
 96           BA    .034
 97           LS              87
 98           UD    .324

 99           KK     C13
100           KM     COMBINE S8, S10, S12, S13, & R25: WASH 1
101           HC       5

102           KK   DIV3R
103           KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
104           KM              DIV2L - WASH 1B
105           DT   DIV3L
106           DI      0.    315.    550.    875.   1280.   1975.
107           DQ      0.     0.1     20.     65.    110.    380.

108           KK   RET2L
109           KM    RETRIEVE DIV2L
110           DR   DIV2L

111           KK     R2L
112           KM     ROUTE DIV2L THRU S26
113           KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
114           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
115           KM      OVERBANKS = 40':(TYPICAL)
116           RS       2    ELEV      10
117           RC    .055    .035    .055    3850    .017
118           RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
119           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

120           KK     S26
121           KM    SUB-BASIN S26: ON-SITE
122           BA    .119
123           LS              77
124           UD    .343

125           KK     C26
126           KM    COMBINE R2L & S26: WASH 1A
127           HC       2

128           KK    NULL
129           HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 130          KK     S30
 131          KM    SUB-BASIN S30: OFF-SITE
 132          BA     .42
 133          LS              88     38.
 134          UD    .452

 135          KK     R30
 136          KM    ROUTE S30 THRU S32: WASH 2A
 137          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 138          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 139          KM      OVERBANKS = 40':(TYPICAL)
 140          RS       1    ELEV      10
 141          RC    .055    .035    .055    2250    .018
 142          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 143          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 144          KK     S32
 145          KM    SUB-BASIN S32: ON-SITE
 146          BA    .074
 147          LS              78
 148          UD    .287

 149          KK     C32
 150          KM    COMBINE S30/R30 & S32: WASH 2A
 151          HC       2

 152          KK     S40
 153          KM    SUB-BASIN S40: OFF-SITE
 154          BA    1.60
 155          LS              84     15.
 156          UD    .985

 157          KK     R48
 158          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 159          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 160          KM      OVERBANKS = 40':(TYPICAL)
 161          RS       2    ELEV      10
 162          RC    .055    .035    .055    8400    .023
 163          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 164          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 165          KK     S50
 166          KM    SUB-BASIN S50: OFF-SITE
 167          BA     .53
 168          LS              86     35.
 169          UD    .535

 170          KK     C51
 171          KM    COMBINE R48/S40 & S50: WASH 2
 172          HC       2
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 173          KK     R51
 174          KM    ROUTE C51 THRU BASIN 54: WASH 2
 175          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 176          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 177          KM      OVERBANKS = 40':(TYPICAL)
 178          RS       2    ELEV      10
 179          RC    .055    .035    .055    3050    .015
 180          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 181          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 182          KK     S54
 183          KM    SUB-BASIN S54: ON-SITE
 184          BA    .044
 185          LS              81
 186          UD    .291

 187          KK     C54
 188          KM    COMBINE S54, C51, C32: WASH 2
 189          HC       3

 190          KK     R54
 191          KM    ROUTE C54 THRU BASIN 56: WASH 2
 192          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 193          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 194          KM      OVERBANKS = 50':(TYPICAL)
 195          RS       2    ELEV      10
 196          RC    .055    .035    .055    4150    .016
 197          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 198          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 199          KK     S56
 200          KM    SUB-BASIN S56: ON-SITE
 201          BA    .171
 202          LS              76
 203          UD    .427

 204          KK     C56
 205          KM    COMBINE S56 & R54: WASH 2
 206          HC       2

 207          KK    NULL
 208          HC       2

 209          KK     S60
 210          KM    SUB-BASIN S60: OFF-SITE
 211          BA    1.81
 212          LS              87     16.
 213          UD    .933
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 214          KK   DIV4R
 215          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 216          DT   DIV4L
 217          DI      0.    294.    633.   1081.   1186.   2008.
 218          DQ      0.    188.    372.    606.    530.   1028.

 219          KK     S70
 220          KM    SUB-BASIN S70: OFF-SITE
 221          BA    .029
 222          LS              85     40.
 223          UD    .120

 224          KK     C70
 225          KM    COMBINE DIV4R & S70: WASH 3
 226          HC       2

 227          KK     R70
 228          KM    ROUTE C70 THRU S62
 229          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 230          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 231          KM      OVERBANKS = 40':(TYPICAL)
 232          RS       3    ELEV      10
 233          RC    .055    .035    .055    6850    .017
 234          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 235          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 236          KK     S62
 237          KM    SUB-BASIN S62: ON-SITE
 238          BA    .193
 239          LS              85
 240          UD    .458

 241          KK     C62
 242          KM    COMBINE S62 & C70: WASH 3
 243          HC       2

 244          KK    NULL
 245          HC       2

 246          KK   RET4L
 247          KM    RETRIEVE DIV4L: WASH 4
 248          DR   DIV4L

 249          KK     S64
 250          KM    SUB-BASIN S64: ON-SITE
 251          BA    .017
 252          LS              84
 253          UD    .224
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 254          KK     C64
 255          KM    COMBINE DIV4L & S64: WASH 4
 256          HC       2

 257          KK   DIV5R
 258          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 259          DT   DIV5L
 260          DI      0.      11.      71.     204.     665.    1556.    3038.
 261          DQ      0.       0.      24.     128.     329.     762.    1656.

 262          KK     R5R
 263          KM    ROUTE DIV5R THRU S66: WASH 4A
 264          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 265          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 266          KM      OVERBANKS = 40':(TYPICAL)
 267          RS       1    ELEV      10
 268          RC    .055    .035    .055    1470    .018
 269          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 270          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 271          KK     S66
 272          KM    SUB-BASIN S66: ON-SITE
 273          BA    .115
 274          LS              77
 275          UD    .230

 276          KK     C66
 277          KM    COMBINE S66 & R5R: WASH 4A
 278          HC       2

 279          KK    NULL
 280          HC       2

 281          KK   RET5L
 282          KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
 283          DR   DIV5L

 284          KK     R5L
 285          KM    ROUTE DIV5L THRU S68: WASH 4
 286          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 287          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 288          KM      OVERBANKS = 40':(TYPICAL)
 289          RS       1    ELEV      10
 290          RC    .055    .035    .055    1750    .018
 291          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 292          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 293          KK     S68
 294          KM    SUB-BASIN S68: ON-SITE
 295          BA    .056
 296          LS              76
 297          UD    .128
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 298          KK     C68
 299          KM    COMBINE S68 & R5L: WASH 4
 300          HC       2

 301          KK    NULL
 302          HC       2

 303          KK     S80
 304          KM    SUB-BASIN S80: OFF-SITE
 305          BA    .058
 306          LS              85
 307          UD    .166

 308          KK     R80
 309          KM    ROUTE S80 THRU S82:
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 40':(TYPICAL)
 313          RS       1    ELEV      10
 314          RC    .055    .035    .055    3590    .018
 315          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 316          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     S82
 318          KM    SUB-BASIN S82: ON-SITE
 319          BA    .052
 320          LS              84
 321          UD    .316

 322          KK     C82
 323          KM    COMBINE S82 & R80:
 324          HC       2

 325          KK    NULL
 326          HC       2

 327          KK     S92
 328          KM    SUB-BASIN S92: ON-SITE
 329          BA    .083
 330          LS              85
 331          UD    .283

 332          KK     S90
 333          KM    SUB-BASIN S90: OFF-SITE
 334          BA    .063
 335          LS              86
 336          UD    .152

 337          KK     R90
 338          KM    ROUTE S90 THRU S92
 339          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 340          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 341          KM      OVERBANKS = 40':(TYPICAL)
 342          RS       2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 343          RC    .055    .035    .055    3500    .018
 344          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 345          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 346          KK     C92
 347          KM    COMBINE S92 & R90:
 348          HC       2

 349          KK     S94
 350          KM    SUB-BASIN S94: OFF-SITE
 351          BA    .132
 352          LS              86
 353          UD    .186

 354          KK     R94
 355          KM    ROUTE S94 TO C100
 356          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 357          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 358          KM      OVERBANKS = 40':(TYPICAL)
 359          RS       1    ELEV      10
 360          RC    .055    .035    .055    1950    .018
 361          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 362          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 363          KK    S100
 364          KM    SUB-BASIN S100: OFF-SITE
 365          BA    .148
 366          LS              86
 367          UD    .196

 368          KK    R100
 369          KM    ROUTE S100 TO C100
 370          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 371          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 372          KM      OVERBANKS = 40':(TYPICAL)
 373          RS       1    ELEV      10
 374          RC    .055    .035    .055    1320    .018
 375          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 376          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 377          KK    S101
 378          KM    SUB-BASIN S101: ON-SITE
 379          BA    .047
 380          LS              85
 381          UD    .272

 382          KK    C100
 383          KM       COMBINE R94, R100 & S101
 384          HC       3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 385          KK    R102
 386          KM    ROUTE C100 TO C102
 387          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 388          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 389          KM      OVERBANKS = 40':(TYPICAL)
 390          RS       1    ELEV      10
 391          RC    .055    .035    .055    1580    .018
 392          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 393          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 394          KK    S102
 395          KM    SUB-BASIN S102: ON-SITE
 396          BA    .014
 397          LS              85
 398          UD    .235

 399          KK    C102
 400          KM       COMBINE R102 & S102
 401          HC       2

 402          KK    C103
 403          KM       COMBINE C92 & C102:WASH 6
 404          HC       2

 405          KK    S150
 406          KM    SUB-BASIN S150: ON-SITE
 407          BA    .020
 408          LS              86
 409          UD

 410          KK    S140
 411          KM    SUB-BASIN S140: ON-SITE
 412          BA    .031
 413          LS              86
 414          UD

 415          KK    S110
 416          KM   SUB-BASIN S110: ON-SITE
 417          BA    .109
 418          LS              83
 419          UD    .345

 420          KK    NULL
 421          HC       3

 422          KK    S120
 423          KM   SUB-BASIN S120: ON-SITE
 424          BA    .052
 425          LS              85
 426          UD    .302
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 427          KK     S28
 428          KM    SUB-BASIN S28: ON-SITE
 429          BA    .081
 430          LS              83
 431          UD    .294

 432          KK    NULL
 433          HC       2
 434          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21        S14
             .
             .
  27         .         S16
             .           .
             .           .
  32         .           .        S20
             .           .          V
             .           .          V
  37         .           .        R20
             .           .          .
             .           .          .
  46         .           .          .         S24
             .           .          .           .
             .           .          .           .
  51       C24.................................
             .
             .
  56         .-------->   DIV1L
  54     DIV1R
             .
             .
  61         .           .<-------   DIV1L
  59         .       RET1L
             .           .
             .           .
  64         .           .------->   DIV2L
  62         .       DIV2R
             .           .
             .           .
  67       C25............
             V
             V
  70       R25
             .
             .
  79         .          S8
             .           .
             .           .
  84         .           .        S10
             .           .          .
             .           .          .
  89         .           .          .         S12
             .           .          .           .
             .           .          .           .
  94         .           .          .           .         S13
             .           .          .           .           .
             .           .          .           .           .
  99       C13.............................................
             .
             .
 105         .------->   DIV3L
 102     DIV3R
             .
             .
 110         .           .<-------   DIV2L
 108         .       RET2L
             .           V
             .           V
```

```
111          .        R2L
             .          .
             .          .
120          .          .        S26
             .          .          .
             .          .          .
125          .        C26............
             .          .
             .          .
128       NULL............
             .
             .
130          .        S30
             .          V
             .          V
135          .        R30
             .          .
             .          .
144          .          .        S32
             .          .          .
             .          .          .
149          .        C32............
             .          .
             .          .
152          .          .        S40
             .          .          V
             .          .          V
157          .          .        R48
             .          .          .
             .          .          .
165          .          .          .        S50
             .          .          .          .
             .          .          .          .
170          .          .        C51............
             .          .          V
             .          .          V
173          .          .        R51
             .          .          .
             .          .          .
182          .          .          .        S54
             .          .          .          .
             .          .          .          .
187          .        C54........................
             .          V
             .          V
190          .        R54
             .          .
             .          .
199          .          .        S56
             .          .          .
             .          .          .
204          .        C56............
             .          .
             .          .
207       NULL............
             .
             .
209          .        S60
             .          .
             .          .
216          .          .-------->   DIV4L
214          .      DIV4R
             .          .
             .          .
219          .          .        S70
             .          .          .
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            .          .          .
224         .        C70............
            .          V
            .          V
227         .        R70
            .          .
            .          .
236         .          .        S62
            .          .          .
            .          .          .
241         .        C62............
            .          .
            .          .
244       NULL............
            .
            .
248         .          .<-------  DIV4L
246         .      RET4L
            .          .
            .          .
249         .          .        S64
            .          .          .
            .          .          .
254         .        C64............
            .          .
            .          .
259         .          .------->  DIV5L
257         .      DIV5R
            .          V
            .          V
262         .        R5R
            .          .
            .          .
271         .          .        S66
            .          .          .
            .          .          .
276         .        C66............
            .          .
            .          .
279       NULL............
            .
            .
283         .          .<-------  DIV5L
281         .      RET5L
            .          V
            .          V
284         .        R5L
            .          .
            .          .
293         .          .        S68
            .          .          .
            .          .          .
298         .        C68............
            .          .
            .          .
301       NULL............
            .
            .
303         .        S80
            .          V
            .          V
308         .        R80
            .          .
            .          .
317         .          .        S82
            .          .          .
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322          .         .         .
             .       C82.........
             .         .
             .         .
325       NULL.........
             .
             .
327          .       S92
             .         .
             .         .
332          .         .       S90
             .         .         V
             .         .         V
337          .         .       R90
             .         .         .
             .         .         .
346          .       C92.........
             .         .
             .         .
349          .         .       S94
             .         .         V
             .         .         V
354          .         .       R94
             .         .         .
             .         .         .
363          .         .         .      S100
             .         .         .        V
             .         .         .        V
368          .         .         .      R100
             .         .         .         .
             .         .         .         .
377          .         .         .         .       S101
             .         .         .         .          .
             .         .         .         .          .
382          .         .      C100.......................
             .         .         V
             .         .         V
385          .         .      R102
             .         .         .
             .         .         .
394          .         .         .      S102
             .         .         .         .
             .         .         .         .
399          .         .      C102.........
             .         .         .
             .         .         .
402          .       C103.........
             .         .
             .         .
405          .         .      S150
             .         .         .
             .         .         .
410          .         .         .      S140
             .         .         .         .
             .         .         .         .
415          .         .         .         .       S110
             .         .         .         .          .
             .         .         .         .          .
420          .         .      NULL.......................
             .         .         .
             .         .         .
422          .         .         .      S120
             .         .         .         .
             .         .         .         .
427          .         .         .         .        S28
             .         .         .         .          .
```

```
            .          .          .          .          .
 432        .          .          .       NULL...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  03/31/1993  TIME  09:48:56 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    DWP100E
                    DEL WEBB PROPERTY - EXISTING CONDITIONS: 59-ZN-92
                    100 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT        HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1    0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     2    0  ENDING DATE
                   NDTIME       0055  ENDING TIME
                   ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

         ENGLISH UNITS
              DRAINAGE AREA         SQUARE MILES
              PRECIPITATION DEPTH   INCHES
              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT

    JP        MULTI-PLAN OPTION
                    NPLAN          1  NUMBER OF PLANS

    JR        MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
                 1.00      .99      .98      .97      .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| OPERATION | STATION | AREA | PLAN | | RATIOS APPLIED TO PRECIPITATION RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 293. | 289. | 285. | 281. | 279. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 116. | 114. | 113. | 111. | 110. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 1811. | 1788. | 1764. | 1741. | 1729. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 1796. | 1773. | 1750. | 1727. | 1716. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.72 | 12.70 | 12.68 | 12.67 | 12.66 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S24 | .03 | 1 | FLOW | 41. | 41. | 40. | 39. | 39. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.11 | 1 | FLOW | 1842. | 1819. | 1795. | 1771. | 1760. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.11 | 1 | FLOW | 1111. | 1095. | 1080. | 1064. | 1056. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.11 | 1 | FLOW | 731. | 723. | 715. | 707. | 703. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 1111. | 1095. | 1080. | 1064. | 1056. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 515. | 509. | 503. | 497. | 494. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 596. | 586. | 577. | 567. | 562. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| 2 COMBINED AT | | | | | | | | | |
| + | C25 | 2.11 | 1 | FLOW | 1328. | 1310. | 1292. | 1274. | 1265. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R25 | 2.11 | 1 | FLOW | 1316. | 1298. | 1280. | 1263. | 1254. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

```
                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       12.29    12.27    12.25    12.23    12.22
                                       TIME         4.08     4.08     4.08     4.08     4.08

 HYDROGRAPH AT
+                  S8       .03    1   FLOW         89.      88.      87.      86.      85.
                                       TIME         3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                 S10       .37    1   FLOW        730.     721.     711.     701.     696.
                                       TIME         3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                 S12       .03    1   FLOW         95.      94.      92.      91.      90.
                                       TIME         3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                 S13       .03    1   FLOW         54.      53.      53.      52.      51.
                                       TIME         3.42     3.42     3.42     3.42     3.42

  5 COMBINED AT
+                 C13      2.57    1   FLOW       1451.    1432.    1413.    1395.    1385.
                                       TIME         4.00     4.00     4.00     4.00     4.00

 DIVERSION TO
+               DIV3L      2.57    1   FLOW        177.     169.     162.     154.     151.
                                       TIME         4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+               DIV3R      2.57    1   FLOW       1275.    1263.    1252.    1240.    1234.
                                       TIME         4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+               RET2L       .00    1   FLOW        515.     509.     503.     497.     494.
                                       TIME         4.00     4.00     4.00     4.00     4.00

 ROUTED TO
+                 R2L       .00    1   FLOW        506.     501.     495.     489.     487.
                                       TIME         4.17     4.17     4.17     4.17     4.17

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       12.47    12.46    12.44    12.43    12.42
                                       TIME         4.17     4.17     4.17     4.17     4.17

 HYDROGRAPH AT
+                 S26       .12    1   FLOW        115.     112.     110.     108.     107.
                                       TIME         3.42     3.42     3.42     3.42     3.42

  2 COMBINED AT
+                 C26       .12    1   FLOW        537.     531.     525.     519.     516.
                                       TIME         4.08     4.08     4.08     4.08     4.08

  2 COMBINED AT
+                NULL      2.69    1   FLOW       1809.    1792.    1774.    1757.    1749.
                                       TIME         4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                 S30       .42    1   FLOW        651.     643.     635.     627.     623.
                                       TIME         3.50     3.50     3.50     3.50     3.50

 ROUTED TO
+                 R30       .42    1   FLOW        621.     614.     608.     601.     597.
                                       TIME         3.58     3.58     3.58     3.58     3.58

                                   ** PEAK STAGES IN FEET **
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 12.69 | 12.68 | 12.66 | 12.65 | 12.65 |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S32 | .07 | 1 | FLOW | 82. | 81. | 79. | 78. | 77. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C32 | .49 | 1 | FLOW | 680. | 672. | 664. | 656. | 652. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S40 | 1.60 | 1 | FLOW | 1137. | 1120. | 1103. | 1087. | 1078. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R48 | 1.60 | 1 | FLOW | 1079. | 1062. | 1045. | 1029. | 1020. |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 13.57 | 13.55 | 13.54 | 13.52 | 13.51 |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S50 | .53 | 1 | FLOW | 693. | 685. | 676. | 667. | 662. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C51 | 2.13 | 1 | FLOW | 1315. | 1293. | 1271. | 1249. | 1238. |
| | | | | TIME | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| ROUTED TO | | | | | | | | | |
| + | R51 | 2.13 | 1 | FLOW | 1306. | 1284. | 1263. | 1242. | 1231. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 13.67 | 13.65 | 13.62 | 13.60 | 13.59 |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S54 | .04 | 1 | FLOW | 57. | 56. | 55. | 54. | 53. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 3 COMBINED AT | | | | | | | | | |
| + | C54 | 2.67 | 1 | FLOW | 1696. | 1675. | 1654. | 1632. | 1621. |
| | | | | TIME | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| ROUTED TO | | | | | | | | | |
| + | R54 | 2.67 | 1 | FLOW | 1651. | 1631. | 1613. | 1596. | 1586. |
| | | | | TIME | 3.92 | 3.83 | 3.83 | 3.83 | 3.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.65 | 12.63 | 12.62 | 12.60 | 12.59 |
| | | | | TIME | 3.92 | 3.83 | 3.83 | 3.83 | 3.83 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S56 | .17 | 1 | FLOW | 135. | 132. | 129. | 127. | 125. |
| | | | | TIME | 3.50 | 3.50 | 3.50 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C56 | 2.84 | 1 | FLOW | 1742. | 1722. | 1703. | 1684. | 1673. |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 5.53 | 1 | FLOW | 3530. | 3491. | 3454. | 3420. | 3401. |
| | | | | TIME | 3.92 | 3.92 | 3.83 | 3.83 | 3.83 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HYDROGRAPH AT | | | | | | | | | |
| + | S60 | 1.81 | 1 | FLOW | 1489. | 1468. | 1448. | 1428. | 1418. |
| | | | | TIME | 4.00 | 4.00 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV4L | 1.81 | 1 | FLOW | 714. | 701. | 689. | 676. | 670. |
| | | | | TIME | 4.00 | 4.00 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV4R | 1.81 | 1 | FLOW | 775. | 767. | 759. | 751. | 747. |
| | | | | TIME | 4.00 | 4.00 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S70 | .03 | 1 | FLOW | 86. | 85. | 84. | 83. | 82. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | C70 | 1.84 | 1 | FLOW | 781. | 773. | 765. | 756. | 752. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R70 | 1.84 | 1 | FLOW | 750. | 740. | 730. | 722. | 718. |
| | | | | TIME | 4.33 | 4.33 | 4.42 | 4.42 | 4.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.93 | 12.91 | 12.90 | 12.89 | 12.88 |
| | | | | TIME | 4.33 | 4.33 | 4.42 | 4.42 | 4.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S62 | .19 | 1 | FLOW | 226. | 223. | 219. | 216. | 214. |
| | | | | TIME | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C62 | 2.03 | 1 | FLOW | 809. | 798. | 787. | 777. | 772. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.56 | 1 | FLOW | 4231. | 4183. | 4135. | 4085. | 4060. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET4L | .00 | 1 | FLOW | 714. | 701. | 689. | 676. | 670. |
| | | | | TIME | 4.00 | 4.00 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S64 | .02 | 1 | FLOW | 29. | 28. | 28. | 27. | 27. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| 2 COMBINED AT | | | | | | | | | |
| + | C64 | .02 | 1 | FLOW | 718. | 705. | 693. | 680. | 674. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV5L | .02 | 1 | FLOW | 355. | 349. | 342. | 336. | 333. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV5R | .02 | 1 | FLOW | 363. | 357. | 350. | 344. | 341. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R5R | .02 | 1 | FLOW | 359. | 353. | 347. | 340. | 337. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |

** PEAK STAGES IN FEET **

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | STAGE | 12.62 | 12.61 | 12.59 | 12.56 | 12.55 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S66 | .12 | 1 | FLOW | 139. | 136. | 134. | 131. | 130. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | C66 | .13 | 1 | FLOW | 379. | 373. | 366. | 360. | 356. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.70 | 1 | FLOW | 4597. | 4539. | 4484. | 4428. | 4399. |
| | | | | TIME | 4.00 | 3.92 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 355. | 349. | 342. | 336. | 333. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .00 | 1 | FLOW | 350. | 344. | 338. | 332. | 329. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.60 | 12.58 | 12.55 | 12.53 | 12.52 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S68 | .06 | 1 | FLOW | 84. | 83. | 81. | 79. | 78. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .06 | 1 | FLOW | 357. | 351. | 345. | 339. | 336. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.75 | 1 | FLOW | 4946. | 4881. | 4814. | 4748. | 4717. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 121. | 119. | 117. | 116. | 115. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| ROUTED TO | | | | | | | | | |
| + | R80 | .06 | 1 | FLOW | 96. | 94. | 93. | 91. | 90. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.23 | 11.21 | 11.20 | 11.19 | 11.18 |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S82 | .05 | 1 | FLOW | 74. | 73. | 72. | 70. | 70. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C82 | .11 | 1 | FLOW | 168. | 165. | 162. | 159. | 158. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 7.86 | 1 | FLOW | 4984. | 4919. | 4854. | 4792. | 4761. |
| | | | | TIME | 4.00 | 4.00 | 3.92 | 3.92 | 3.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S92 | .08 | 1 | FLOW | 132. | 130. | 128. | 126. | 125. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |

```
 HYDROGRAPH AT
+                S90      .06    1   FLOW        139.     137.     135.     133.     132.
                                     TIME        3.17     3.17     3.17     3.17     3.17

 ROUTED TO
+                R90      .06    1   FLOW        126.     124.     122.     120.     119.
                                     TIME        3.33     3.33     3.33     3.33     3.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.45    11.43    11.42    11.40    11.40
                                     TIME        3.33     3.33     3.33     3.33     3.33

  2 COMBINED AT
+                C92      .15    1   FLOW        258.     254.     250.     246.     244.
                                     TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                S94      .13    1   FLOW        276.     272.     268.     264.     262.
                                     TIME        3.25     3.25     3.25     3.25     3.25

 ROUTED TO
+                R94      .13    1   FLOW        257.     253.     250.     246.     244.
                                     TIME        3.33     3.33     3.33     3.33     3.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      12.20    12.19    12.17    12.15    12.14
                                     TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                S100     .15    1   FLOW        301.     296.     292.     287.     285.
                                     TIME        3.25     3.25     3.25     3.25     3.25

 ROUTED TO
+                R100     .15    1   FLOW        285.     282.     278.     274.     272.
                                     TIME        3.33     3.33     3.25     3.25     3.25

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      12.34    12.33    12.31    12.29    12.28
                                     TIME        3.33     3.33     3.25     3.25     3.25

 HYDROGRAPH AT
+                S101     .05    1   FLOW         77.      76.      74.      73.      73.
                                     TIME        3.33     3.33     3.33     3.33     3.33

  3 COMBINED AT
+                C100     .33    1   FLOW        619.     610.     601.     592.     588.
                                     TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                R102     .33    1   FLOW        564.     555.     546.     538.     533.
                                     TIME        3.42     3.42     3.42     3.42     3.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      13.03    13.01    13.00    12.98    12.98
                                     TIME        3.42     3.42     3.42     3.42     3.42

 HYDROGRAPH AT
+                S102     .01    1   FLOW         24.      24.      24.      23.      23.
                                     TIME        3.33     3.33     3.33     3.33     3.33

  2 COMBINED AT
+                C102     .34    1   FLOW        585.     576.     567.     558.     553.
                                     TIME        3.42     3.42     3.42     3.42     3.42

  2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | C103 | .49 | 1 | FLOW | 839. | 826. | 812. | 798. | 790. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S150 | .02 | 1 | FLOW | 74. | 73. | 72. | 71. | 70. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S140 | .03 | 1 | FLOW | 115. | 113. | 111. | 109. | 109. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S110 | .11 | 1 | FLOW | 141. | 139. | 137. | 134. | 133. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| 3 COMBINED AT | | | | | | | | | |
| + | NULL | .16 | 1 | FLOW | 221. | 217. | 214. | 210. | 208. |
| | | | | TIME | 3.08 | 3.08 | 3.08 | 3.08 | 3.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S120 | .05 | 1 | FLOW | 79. | 77. | 76. | 75. | 74. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S28 | .08 | 1 | FLOW | 114. | 112. | 110. | 108. | 107. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | .13 | 1 | FLOW | 193. | 189. | 186. | 183. | 182. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |

*** NORMAL END OF HEC-1 ***

# APPENDIX C - HEC-1 MODEL: PROPOSED CONDITIONS

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  04/01/1993  TIME  07:34:15 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

2 Year Event - Post Development Conditions

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        DWP2P
  2           ID        DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-ZN-92
  3           ID        2 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT       5                     300
 19           IO       5       0
 20           JR    PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                   0.39     .71    1.14    1.27    1.36    1.53
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK    SCOM
  47          KM    SUB-BASIN SCOM: ON-SITE
  48          BA    .020
  49          LS              85      50
  50          UD    .252

  51          KK   RBCOM
  52          KM     RETENTION BASIN
  53          RS       1    ELEV      10
  54          SV       0     1.0     2.8     10.
  55          SE      10     11.     13.     15.
  56          SQ       0     1.0     1.5    200.

  57          KK     C24
  58          KM     COMBINE S14, S16, S20/R20, & SCOM
  59          HC       4

  60          KK   DIV1R
  61          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  62          DT   DIV1L
  63          DI      0.      9.    132.    458.   1140.   2174.   3491.
  64          DQ      0.      0.     48.    223.    647.   1330.   2208.

  65          KK   RET1L
  66          KM    RETRIEVE DIV1L
  67          DR   DIV1L

  68          KK   DIV2R
  69          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  70          DT   DIV2L
  71          DI      0.      8.     50.    188.    370.    697.   1376.
  72          DQ      0.      8.     38.    119.    203.    361.    613.

  73          KK     C25
  74          KM    COMBINE DIV1R & DIV2R
  75          HC       2

  76          KK     R25
  77          KM    ROUTE C25 THRU SGC1
  78          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  79          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  80          KM      OVERBANKS = 50':(TYPICAL)
  81          RS       1    ELEV      10
  82          RC    .055    .035    .055    3550    .017
  83          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
  84          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

  85          KK      S8
  86          KM    SUB-BASIN S8: OFF-SITE
  87          BA    .031
  88          LS              85     26.
  89          UD    .110
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  90          KK     S10
  91          KM    SUB-BASIN S10: OFF-SITE
  92          BA    .368
  93          LS              87     19.
  94          UD    .252

  95          KK     S12
  96          KM    SUB-BASIN S12: OFF-SITE
  97          BA    .034
  98          LS              85     32.
  99          UD    .127

 100          KK    SGC1
 101          KM    SUB-BASIN SGC1: ON-SITE
 102          BA    .012
 103          LS              85
 104          UD    .267

 105          KK   RBGC1
 106          KM     RETENTION BASIN
 107          RS       1    ELEV      10
 108          SV       0      .5     1.0     10.
 109          SE      10     11.     13.     15.
 110          SQ       0     1.0     1.5    200.

 111          KK     C13
 112          KM     COMBINE S8, S10, S12, SGC1, & R25: WASH 1
 113          HC       5

 114          KK   DIV3R
 115          KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
 116          KM              DIV2L - WASH 1B
 117          DT   DIV3L
 118          DI      0.    315.    550.    875.   1280.   1975.
 119          DQ      0.     0.1     20.     65.    110.    380.

 120          KK   RET3L
 121          KM     RETRIEVE DIV3L:WASH 1B
 122          DR   DIV3L

 123          KK      SQ
 124          KM    SUB-BASIN SQ: ON-SITE
 125          BA    .015
 126          LS              85     35.
 127          UD    .301

 128          KK     RBQ
 129          KM     RETENTION BASIN
 130          RS       1    ELEV      10
 131          SV       0      .7     1.4     10.
 132          SE      10     11.     13.     15.
 133          SQ       0     1.0     1.5    200.
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 134          KK     C1B
 135          KM      WASH 1B
 136          HC       2

 137          KK   RET2L
 138          KM     RETRIEVE DIV2L
 139          DR   DIV2L

 140          KK     ST2
 141          KM    SUB-BASIN ST2: ON-SITE
 142          BA    .029
 143          LS            77     35.
 144          UD    .315

 145          KK    RBT2
 146          KM     RETENTION BASIN
 147          RS       1    ELEV      10
 148          SV       0     1.0     2.0     10.
 149          SE      10     11.     13.     15.
 150          SQ       0     1.0     1.5    200.

 151          KK     SS1
 152          KM    SUB-BASIN SS1: ON-SITE
 153          BA    .019
 154          LS            77     35.
 155          UD    .309

 156          KK    RBS1
 157          KM     RETENTION BASIN
 158          RS       1    ELEV      10
 159          SV       0      .7     1.3     10.
 160          SE      10     11.     13.     15.
 161          SQ       0     1.0     1.5    200.

 162          KK     C2L
 163          KM     COMBINE
 164          HC       3

 165          KK     R2L
 166          KM     ROUTE C2L
 167          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 168          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 169          KM      OVERBANKS = 40':(TYPICAL)
 170          RS       2    ELEV      10
 171          RC    .055    .035    .055    3850    .017
 172          RX   48.5    51.5    91.5      94     114   116.5   156.5   159.5
 173          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 174          KK     SR1
 175          KM    SUB-BASIN SR1: ON-SITE
 176          BA    .021
 177          LS            77     35.
 178          UD    .318
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 179          KK    RBR1
 180          KM     RETENTION BASIN
 181          RS       1    ELEV      10
 182          SV       0      .8     1.5     10.
 183          SE      10     11.     13.     15.
 184          SQ       0     1.0     1.5    200.

 185          KK     SP1
 186          KM    SUB-BASIN SP: ON-SITE
 187          BA    .018
 188          LS              77     35.
 189          UD    .313

 190          KK    RBP1
 191          KM     RETENTION BASIN
 192          RS       1    ELEV      10
 193          SV       0      .7     1.3     10.
 194          SE      10     11.     13.     15.
 195          SQ       0     1.0     1.5    200.

 196          KK     SM1
 197          KM    SUB-BASIN SM1: ON-SITE
 198          BA    .019
 199          LS              78     35.
 200          UD    .305

 201          KK    RBM1
 202          KM     RETENTION BASIN
 203          RS       1    ELEV      10
 204          SV       0      .7     1.4     10.
 205          SE      10     11.     13.     15.
 206          SQ       0     1.0     1.5    200.

 207          KK     C26
 208          KM    COMBINE R2L, RBR, RBP, RBM1 : WASH 1B
 209          HC       4

 210          KK    NULL
 211          HC       2

 212          KK     S30
 213          KM    SUB-BASIN S30: OFF-SITE
 214          BA     .42
 215          LS              88     38.
 216          UD    .452

 217          KK     R30
 218          KM    ROUTE S30 THRU S32: WASH 2A
 219          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 220          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 221          KM      OVERBANKS = 40':(TYPICAL)
 222          RS       1    ELEV      10
 223          RC    .055    .035    .055    2250    .018
 224          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 225          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 226          KK     SA1
 227          KM    SUB-BASIN SA: ON-SITE
 228          BA    .027
 229          LS              80     35.
 230          UD    .297

 231          KK    RBA1
 232          KM     RETENTION BASIN
 233          RS       1    ELEV      10
 234          SV       0     1.0     2.1     10.
 235          SE      10     11.     13.     15.
 236          SQ       0     1.0     1.5    200.

 237          KK     C32
 238          KM    COMBINE S30/R30 & RBA: WASH 2A
 239          HC       2

 240          KK     S40
 241          KM    SUB-BASIN S40: OFF-SITE
 242          BA    1.60
 243          LS              84     15.
 244          UD    .985

 245          KK     R48
 246          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 247          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 248          KM      OVERBANKS = 40':(TYPICAL)
 249          RS       2    ELEV      10
 250          RC    .055    .035    .055    8400    .023
 251          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 252          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 253          KK     S50
 254          KM    SUB-BASIN S50: OFF-SITE
 255          BA     .53
 256          LS              86     35.
 257          UD    .535

 258          KK     C51
 259          KM    COMBINE R48/S40 & S50: WASH 2
 260          HC       2

 261          KK     SJ1
 262          KM    SUB-BASIN SJ: ON-SITE
 263          BA    .027
 264          LS              85     35.
 265          UD    .305
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 266          KK    RBJ1
 267          KM     RETENTION BASIN
 268          RS       1    ELEV      10
 269          SV       0     1.3     2.5     10.
 270          SE      10     11.     13.     15.
 271          SQ       0     1.0     1.5    200.

 272          KK     C52
 273          HC       2

 274          KK     R51
 275          KM    ROUTE C51 THRU BASIN 54: WASH 2
 276          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 277          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 278          KM      OVERBANKS = 40':(TYPICAL)
 279          RS       2    ELEV      10
 280          RC    .055    .035    .055    3050    .015
 281          RX   48.5    51.5    91.5      94     114   116.5   156.5   159.5
 282          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 283          KK    SGC6
 284          KM    SUB-BASIN SGC6: ON-SITE
 285          BA    .017
 286          LS              85
 287          UD    .251

 288          KK   RBGC6
 289          KM     RETENTION BASIN
 290          RS       1    ELEV      10
 291          SV       0      .6     1.2     10.
 292          SE      10     11.     13.     15.
 293          SQ       0     1.0     1.5    200.

 294          KK     ST1
 295          KM    SUB-BASIN ST1: ON-SITE
 296          BA    .029
 297          LS              77     35.
 298          UD    .315

 299          KK    RBT1
 300          KM     RETENTION BASIN
 301          RS       1    ELEV      10
 302          SV       0     1.0     2.0     10.
 303          SE      10     11.     13.     15.
 304          SQ       0     1.0     1.5    200.

 305          KK     C54
 306          KM    COMBINE RBT1,RBGC6, C51, C32: WASH 2
 307          HC       4
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 308          KK     R54
 309          KM    ROUTE C54 THRU BASIN 56: WASH 2
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 50':(TYPICAL)
 313          RS       2    ELEV      10
 314          RC    .055    .035    .055    4150    .016
 315          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 316          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     SU1
 318          KM    SUB-BASIN SU: ON-SITE
 319          BA    .048
 320          LS              77     35.
 321          UD    .330

 322          KK    RBU1
 323          KM     RETENTION BASIN
 324          RS       1    ELEV      10
 325          SV       0     1.2     3.5     10.
 326          SE      10     11.     13.     15.
 327          SQ       0     1.2     1.5    200.

 328          KK     SL1
 329          KM    SUB-BASIN SL: ON-SITE
 330          BA    .029
 331          LS              78     35.
 332          UD    .318

 333          KK    RBL1
 334          KM     RETENTION BASIN
 335          RS       1    ELEV      10
 336          SV       0     1.0     2.1     10.
 337          SE      10     11.     13.     15.
 338          SQ       0     1.0     1.5    200.

 339          KK     SN2
 340          KM    SUB-BASIN SN2: ON-SITE
 341          BA    .007
 342          LS              85     35.
 343          UD    .276

 344          KK    RBN2
 345          KM     RETENTION BASIN
 346          RS       1    ELEV      10
 347          SV       0      .4      .7     10.
 348          SE      10     11.     13.     15.
 349          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 350          KK     C56
 351          KM    COMBINE R54,RBL,RBN2,RBU: WASH 2
 352          HC       4

 353          KK    SGC3
 354          KM    SUB-BASIN GC3: ON-SITE
 355          BA   .019
 356          LS              85
 357          UD    .401

 358          KK   RBGC3
 359          KM    .RETENTION BASIN
 360          RS       1    ELEV      10
 361          SV       0      .9     1.7     10.
 362          SE      10     11.     13.     15.
 363          SQ       0     1.0     1.5    200.

 364          KK    NULL
 365          HC       3

 366          KK     S60
 367          KM    SUB-BASIN S60: OFF-SITE
 368          BA    1.81
 369          LS              87     16.
 370          UD    .933

 371          KK   DIV4R
 372          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 373          DT   DIV4L
 374          DI      0.    294.    633.   1081.   1186.   2008.
 375          DQ      0.    188.    372.    606.    530.   1028.

 376          KK     S70
 377          KM    SUB-BASIN S70: OFF-SITE
 378          BA    .029
 379          LS              85     40.
 380          UD    .120

 381          KK     SI3
 382          KM    SUB-BASIN SI3: ON-SITE
 383          BA    .013
 384          LS              85     35.
 385          UD    .286

 386          KK    RBI3
 387          KM     RETENTION BASIN
 388          RS       1    ELEV      10
 389          SV       0      .6     1.2     10.
 390          SE      10     11.     13.     15.
 391          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 392          KK     C70
 393          KM    COMBINE DIV4R,RB13 & S70: WASH 3
 394          HC       3

 395          KK     R70
 396          KM    ROUTE C70
 397          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 398          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 399          KM      OVERBANKS = 40':(TYPICAL)
 400          RS       2    ELEV      10
 401          RC    .055    .035    .055    3000    .017
 402          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 403          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 404          KK     SB1
 405          KM    SUB-BASIN SB1: ON-SITE
 406          BA    .030
 407          LS              84     35.
 408          UD    .307

 409          KK    RBB1
 410          KM     RETENTION BASIN
 411          RS       1    ELEV      10
 412          SV       0     1.4     2.7     10.
 413          SE      10     11.     13.     15.
 414          SQ       0     1.0     1.5    200.

 415          KK    SGC4
 416          KM    SUB-BASIN GC4: ON-SITE
 417          BA    .032
 418          LS              85
 419          UD    .251

 420          KK   RBGC4
 421          KM     RETENTION BASIN
 422          RS       1    ELEV      10
 423          SV       0     1.1     2.2     10.
 424          SE      10     11.     13.     15.
 425          SQ       0     1.0     1.5    200.

 426          KK     C71
 427          KM        COMBINE R70, RBB,RBGC4:WASH 3
 428          HC       3

 429          KK     R71
 430          KM    ROUTE C71
 431          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 432          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 433          KM      OVERBANKS = 40':(TYPICAL)
 434          RS       2    ELEV      10
 435          RC    .055    .035    .055    3850    .017
 436          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 437          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 438          KK     SN1
 439          KM    SUB-BASIN SN1: ON-SITE
 440          BA    .060
 441          LS              85     35.
 442          UD    .276

 443          KK    RBN1
 444          KM     RETENTION BASIN
 445          RS       1    ELEV      10
 446          SV       0     2.7     5.5     10.
 447          SE      10     11.     13.     15.
 448          SQ       0     1.8     2.0    200.

 449          KK     C62
 450          KM    COMBINE RBN1 & R71: WASH 3
 451          HC       2

 452          KK    NULL
 453          HC       2

 454          KK   RET4L
 455          KM    RETRIEVE DIV4L: WASH 4
 456          DR   DIV4L

 457          KK   DIV5R
 458          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 459          DT   DIV5L
 460          DI      0.     11.     71.    204.    665.   1556.   3038.
 461          DQ      0.      0.     24.    128.    329.    762.   1656.

 462          KK     R5R
 463          KM    ROUTE DIV5R THRU S66: WASH 4A
 464          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 465          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 466          KM      OVERBANKS = 40':(TYPICAL)
 467          RS       1    ELEV      10
 468          RC    .055    .035    .055    1470    .018
 469          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 470          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 471          KK     SC1
 472          KM    SUB-BASIN SC1: ON-SITE
 473          BA    .025
 474          LS              77     35.
 475          UD    .309

 476          KK    RBC1
 477          KM     RETENTION BASIN
 478          RS       1    ELEV      10
 479          SV       0     1.4     2.7     10.
 480          SE      10     11.     13.     15.
 481          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 482          KK     SD1
 483          KM    SUB-BASIN SS1: ON-SITE
 484          BA    .024
 485          LS              77     35.
 486          UD    .278

 487          KK    RBD1
 488          KM     RETENTION BASIN
 489          RS       1    ELEV      10
 490          SV       0      .9     1.7     10.
 491          SE      10     11.     13.     15.
 492          SQ       0     1.0     1.5    200.

 493          KK     C66
 494          KM    COMBINE RBC1,RBD1, R5R: WASH 4A
 495          HC       3

 496          KK    NULL
 497          HC       2

 498          KK   RET5L
 499          KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
 500          DR   DIV5L

 501          KK     SI2
 502          KM    SUB-BASIN SI2: ON-SITE
 503          BA    .015
 504          LS              77     35.
 505          UD    .303

 506          KK    RBI2
 507          KM     RETENTION BASIN
 508          RS       1    ELEV      10
 509          SV       0      .7     1.4     10.
 510          SE      10     11.     13.     15.
 511          SQ       0     1.0     1.5    200.

 512          KK     C5L
 513          HC       2

 514          KK     R5L
 515          KM    ROUTE DIV5L THRU S68: WASH 4
 516          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 517          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 518          KM      OVERBANKS = 40':(TYPICAL)
 519          RS       1    ELEV      10
 520          RC    .055    .035    .055    1750    .018
 521          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 522          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 523          KK     SE2
 524          KM    SUB-BASIN SE2: ON-SITE
 525          BA    .009
 526          LS              85     35.
 527          UD    .336

 528          KK    RBE2
 529          KM     RETENTION BASIN
 530          RS      1    ELEV      10
 531          SV      0      .5      .9     10.
 532          SE     10     11.     13.     15.
 533          SQ      0     1.0     1.5    200.

 534          KK     C68
 535          KM    COMBINE RBE2 & R5L: WASH 4
 536          HC      2

 537          KK    NULL
 538          HC      2

 539          KK     S80
 540          KM    SUB-BASIN S80: OFF-SITE
 541          BA    .058
 542          LS              85
 543          UD    .166

 544          KK     S90
 545          KM    SUB-BASIN S90: OFF-SITE
 546          BA    .063
 547          LS              86
 548          UD    .152

 549          KK     SI1
 550          KM    SUB-BASIN SI1: ON-SITE
 551          BA    .015
 552          LS              85     35.
 553          UD    .301

 554          KK    RBI1
 555          KM     RETENTION BASIN
 556          RS      1    ELEV      10
 557          SV      0      .7     1.4     10.
 558          SE     10     11.     13.     15.
 559          SQ      0     1.0     1.5    200.

 560          KK     C90
 561          HC      3

 562          KK     R90
 563          KM    ROUTE C90
 564          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 565          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 566          KM      OVERBANKS = 40':(TYPICAL)
 567          RS      2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 568          RC    .055    .035    .055    3500    .018
 569          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 570          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 571          KK     S94
 572          KM    SUB-BASIN S94: OFF-SITE
 573          BA    .132
 574          LS            86
 575          UD    .186

 576          KK    S100
 577          KM    SUB-BASIN S100: OFF-SITE
 578          BA    .148
 579          LS            86
 580          UD    .196

 581          KK     SH1
 582          KM    SUB-BASIN SH: ON-SITE
 583          BA    .029
 584          LS            85     35.
 585          UD    .313

 586          KK    RBH1
 587          KM     RETENTION BASIN
 588          RS       1    ELEV      10
 589          SV       0     1.4     2.7     10.
 590          SE      10     11.     13.     15.
 591          SQ       0     1.0     1.5    200.

 592          KK    C100
 593          HC       3

 594          KK    R100
 595          KM    ROUTE C100 :WASH 6
 596          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 597          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 598          KM      OVERBANKS = 40':(TYPICAL)
 599          RS       2    ELEV      10
 600          RC    .055    .035    .055    2400    .018
 601          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 602          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 603          KK     SE1
 604          KM    SUB-BASIN SE1: ON-SITE
 605          BA    .038
 606          LS            85     35.
 607          UD    .293

 608          KK    RBE1
 609          KM     RETENTION BASIN
 610          RS       1    ELEV      10
 611          SV       0     1.7     3.5     10.
 612          SE      10     11.     13.     15.
 613          SQ       0     1.2     2.0    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 614          KK    SGC5
 615          KM    SUB-BASIN GC5: ON-SITE
 616          BA    .029
 617          LS              85
 618          UD    .351

 619          KK   RBGC5
 620          KM     RETENTION BASIN
 621          RS       1    ELEV      10
 622          SV       0     1.1     2.1     10.
 623          SE      10     11.     13.     15.
 624          SQ       0     1.0     1.5    200.

 625          KK    C103
 626          KM        COMBINE RBGC5,RBE1,R90,R100:WASH 6
 627          HC       4

 628          KK    SGC2
 629          KM    SUB-BASIN GC2: ON-SITE
 630          BA    .024
 631          LS              85
 632          UD    .359

 633          KK   RBGC2
 634          KM     RETENTION BASIN
 635          RS       1    ELEV      10
 636          SV       0      .9     1.7     10.
 637          SE      10     11.     13.     15.
 638          SQ       0     1.0     1.5    200.

 639          KK     SO1
 640          KM    SUB-BASIN SO: ON-SITE
 641          BA    .014
 642          LS              81     35.
 643          UD    .315

 644          KK    RBO1
 645          KM     RETENTION BASIN
 646          RS       1    ELEV      10
 647          SV       0      .6     1.2     10.
 648          SE      10     11.     13.     15.
 649          SQ       0     1.0     1.5    200.

 650          KK      CO
 651          HC       2

 652          KK     SM2
 653          KM    SUB-BASIN SM2: ON-SITE
 654          BA    .029
 655          LS              78     35.
 656          UD    .322
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 657          KK    RBM2
 658          KM     RETENTION BASIN
 659          RS       1    ELEV      10
 660          SV       0     1.1     2.1     10.
 661          SE      10     11.     13.     15.
 662          SQ       0     1.0     1.5    200.

 663          KK     C28
 664          HC       2

 665          KK    NULL
 666          HC       2

 667          KK     SK1
 668          KM    SUB-BASIN SK1: ON-SITE
 669          BA    .026
 670          LS              85     35.
 671          UD    .318

 672          KK    RBK1
 673          KM     RETENTION BASIN
 674          RS       1    ELEV      10
 675          SV       0     1.2     2.4     10.
 676          SE      10     11.     13.     15.
 677          SQ       0     1.0     1.5    200.

 678          KK     SF1
 679          KM    SUB-BASIN SF1: ON-SITE
 680          BA    .018
 681          LS              85     35.
 682          UD    .297

 683          KK    RBF1
 684          KM     RETENTION BASIN
 685          RS       1    ELEV      10
 686          SV       0      .9     1.7     10.
 687          SE      10     11.     13.     15.
 688          SQ       0     1.0     1.5    200.

 689          KK    NULL
 690          HC       2

 691          KK     SG1
 692          KM    SUB-BASIN SG1: ON-SITE
 693          BA    .031
 694          LS              85     35.
 695          UD    .318

 696          KK    RBG1
 697          KM     RETENTION BASIN
 698          RS       1    ELEV      10
 699          SV       0     1.5     2.9     10.
 700          SE      10     11.     13.     15.
 701          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 702          KK     SG2
 703          KM    SUB-BASIN SG2: ON-SITE
 704          BA    .031
 705          LS              85     35.
 706          UD    .318

 707          KK    RBG2
 708          KM     RETENTION BASIN
 709          RS       1    ELEV      10
 710          SV       0     1.5     2.9     10.
 711          SE      10     11.     13.     15.
 712          SQ       0     1.0     1.5    200.

 713          KK    NULL
 714          HC       2
 715          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
               .
               .
  27           .         S16
               .           .
               .           .
  32           .           .         S20
               .           .           V
               .           .           V
  37           .           .         R20
               .           .           .
               .           .           .
  46           .           .           .        SCOM
               .           .           .          V
               .           .           .          V
  51           .           .           .       RBCOM
               .           .           .          .
               .           .           .          .
  57         C24.................................
               .
               .
  62           .-------->  DIV1L
  60       DIV1R
               .
               .
  67           .           .<-------   DIV1L
  65           .       RET1L
               .           .
               .           .
  70           .           .-------->  DIV2L
  68           .       DIV2R
               .           .
               .           .
  73         C25............
               V
               V
  76         R25
               .
               .
  85           .          S8
               .           .
               .           .
  90           .           .         S10
               .           .           .
               .           .           .
  95           .           .           .        S12
               .           .           .          .
               .           .           .          .
 100           .           .           .          .        SGC1
               .           .           .          .          V
               .           .           .          .          V
 105           .           .           .          .       RBGC1
               .           .           .          .          .
               .           .           .          .          .
 111         C13.............................................
               .
               .
 117           .-------->  DIV3L
 114       DIV3R
```

```
                .
                .
122             .          .<-------   DIV3L
120             .      RET3L
                .          .
                .          .
123             .          .          SQ
                .          .           V
                .          .           V
128             .          .         RBQ
                .          .           .
                .          .           .
134             .       C1B............
                .          .
                .          .
139             .          .           .<-------   DIV2L
137             .          .      RET2L
                .          .           .
                .          .           .
140             .          .           .        ST2
                .          .           .         V
                .          .           .         V
145             .          .           .       RBT2
                .          .           .          .
                .          .           .          .
151             .          .           .          .        SS1
                .          .           .          .         V
                .          .           .          .         V
156             .          .           .          .       RBS1
                .          .           .          .          .
                .          .           .          .          .
162             .          .         C2L.......................
                .          .           V
                .          .           V
165             .          .         R2L
                .          .           .
                .          .           .
174             .          .           .        SR1
                .          .           .         V
                .          .           .         V
179             .          .           .       RBR1
                .          .           .          .
                .          .           .          .
185             .          .           .          .        SP1
                .          .           .          .         V
                .          .           .          .         V
190             .          .           .          .       RBP1
                .          .           .          .          .
                .          .           .          .          .
196             .          .           .          .          .        SM1
                .          .           .          .          .         V
                .          .           .          .          .         V
201             .          .           .          .          .       RBM1
                .          .           .          .          .          .
                .          .           .          .          .          .
207             .          .         C26.................................
                .          .           .
                .          .           .
210             .       NULL............
                .          .
                .          .
212             .          .         S30
                .          .           V
                .          .           V
217             .          .         R30
                .          .           .
```

```
226          SA1
               V
               V
231          RBA1
               .
               .
237     C32............
               .
               .
240          S40
               V
               V
245          R48
               .
               .
253                    S50
                        .
                        .
258          C51............
               .
               .
261                    SJ1
                        V
                        V
266                   RBJ1
                        .
                        .
272          C52............
               V
               V
274          R51
               .
               .
283                   SGC6
                        V
                        V
288                  RBGC6
                        .
                        .
294                              ST1
                                  V
                                  V
299                             RBT1
                                  .
                                  .
305     C54.......................................
          V
          V
308     R54
          .
          .
317          SU1
               V
               V
322          RBU1
               .
               .
328                    SL1
                        V
                        V
333                   RBL1
                        .
                        .
339                              SN2
                                  V
```

```
                                                    V
344                                               RBN2
                                                    .
                                                    .
350                  C56.................................
353                                  SGC3
                                       V
                                       V
358                                 RBGC3
                                       .
                                       .
364              NULL.......................
366                  S60
                      .
                      .
373                   .-------->   DIV4L
371                 DIV4R
                      .
                      .
376                                  S70
                                       .
                                       .
381                                                 SI3
                                                     V
                                                     V
386                                                RBI3
                                                     .
                                                     .
392                  C70.......................
                      V
                      V
395                  R70
                      .
                      .
404                                  SB1
                                       V
                                       V
409                                 RBB1
                                       .
                                       .
415                                                 SGC4
                                                     V
                                                     V
420                                                RBGC4
                                                     .
                                                     .
426                  C71.......................
                      V
                      V
429                  R71
                      .
                      .
438                                  SN1
                                       V
                                       V
443                                 RBN1
                                       .
                                       .
449                  C62............
                      .
                      .
452              NULL............
```

```
456                 .<-------  DIV4L
454             RET4L
                    .
                    .
459                 .------->  DIV5L
457             DIV5R
                    V
                    V
462                R5R
                    .
                    .
471                 .        SC1
                    .         V
                    .         V
476                 .       RBC1
                    .         .
                    .         .
482                 .         .        SD1
                    .         .         V
                    .         .         V
487                 .         .       RBD1
                    .         .         .
                    .         .         .
493                C66.......................
                    .
                    .
496         NULL............
                    .
                    .
500                 .<-------  DIV5L
498            RET5L
                    .
                    .
501                 .        SI2
                    .         V
                    .         V
506                 .       RBI2
                    .         .
                    .         .
512               C5L............
                    V
                    V
514               R5L
                    .
                    .
523                 .        SE2
                    .         V
                    .         V
528                 .       RBE2
                    .         .
                    .         .
534               C68............
                    .
                    .
537         NULL............
                    .
                    .
539               S80
                    .
                    .
544                 .        S90
                    .         .
                    .         .
549                 .         .        SI1
```

```
                 .         .         .         .         V
                 .         .         .         .         V
554              .         .         .         .      RBI1
                 .         .         .         .         .
                 .         .         .         .         .
560              .         .       C90.......................
                 .         .         V
                 .         .         V
562              .         .       R90
                 .         .         .
                 .         .         .
571              .         .         .       S94
                 .         .         .         .
                 .         .         .         .
576              .         .         .         .      S100
                 .         .         .         .         .
                 .         .         .         .         .
581              .         .         .         .         .         SH1
                 .         .         .         .         .           V
                 .         .         .         .         .           V
586              .         .         .         .         .        RBH1
                 .         .         .         .         .           .
                 .         .         .         .         .           .
592              .         .         .       C100........................
                 .         .         .         V
                 .         .         .         V
594              .         .         .       R100
                 .         .         .         .
                 .         .         .         .
603              .         .         .         .       SE1
                 .         .         .         .         V
                 .         .         .         .         V
608              .         .         .         .      RBE1
                 .         .         .         .         .
                 .         .         .         .         .
614              .         .         .         .         .         SGC5
                 .         .         .         .         .           V
                 .         .         .         .         .           V
619              .         .         .         .         .       RBGC5
                 .         .         .         .         .           .
                 .         .         .         .         .           .
625              .         .       C103.................................
                 .         .         .
                 .         .         .
628              .         .         .       SGC2
                 .         .         .         V
                 .         .         .         V
633              .         .         .      RBGC2
                 .         .         .         .
                 .         .         .         .
639              .         .         .         .       SO1
                 .         .         .         .         V
                 .         .         .         .         V
644              .         .         .         .      RBO1
                 .         .         .         .         .
                 .         .         .         .         .
650              .         .         .        CO............
                 .         .         .         .
                 .         .         .         .
652              .         .         .         .       SM2
                 .         .         .         .         V
                 .         .         .         .         V
657              .         .         .         .      RBM2
                 .         .         .         .         .
                 .         .         .         .         .
663              .         .         .       C28............
```

```
                .         .         .         .
                .         .         .         .
665             .         .      NULL............
                .         .         .
                .         .         .
667             .         .         .       SK1
                .         .         .         V
                .         .         .         V
672             .         .         .      RBK1
                .         .         .         .
                .         .         .         .
678             .         .         .         .       SF1
                .         .         .         .         V
                .         .         .         .         V
683             .         .         .         .      RBF1
                .         .         .         .         .
                .         .         .         .         .
689             .         .         .      NULL............
                .         .         .         .
                .         .         .         .
691             .         .         .         .       SG1
                .         .         .         .         V
                .         .         .         .         V
696             .         .         .         .      RBG1
                .         .         .         .         .
                .         .         .         .         .
702             .         .         .         .         .       SG2
                .         .         .         .         .         V
                .         .         .         .         .         V
707             .         .         .         .         .      RBG2
                .         .         .         .         .         .
                .         .         .         .         .         .
713             .         .         .         .      NULL............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
* RUN DATE  04/01/1993  TIME  07:34:15 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    DWP2P
                    DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-ZN-92
                    2 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1   0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      2   0  ENDING DATE
                   NDTIME       0055  ENDING TIME
                    ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

   JP         MULTI-PLAN OPTION
                    NPLAN          1  NUMBER OF PLANS

   JR         MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
                1.00       .99       .98       .97       .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| | | | | | RATIOS APPLIED TO PRECIPITATION | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OPERATION | STATION | AREA | PLAN | | RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 104. | 102. | 100. | 99. | 98. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 40. | 40. | 39. | 38. | 38. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 634. | 625. | 616. | 606. | 602. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 633. | 623. | 613. | 604. | 599. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.47 | 11.46 | 11.45 | 11.43 | 11.42 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SCOM | .02 | 1 | FLOW | 17. | 17. | 16. | 16. | 16. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBCOM | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.67 | 4.67 | 4.67 | 4.67 | 4.67 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.88 | 10.86 | 10.85 | 10.84 | 10.84 |
| | | | | TIME | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.09 | 1 | FLOW | 645. | 636. | 626. | 616. | 611. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.09 | 1 | FLOW | 339. | 333. | 327. | 321. | 318. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.09 | 1 | FLOW | 306. | 302. | 298. | 295. | 293. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 339. | 333. | 327. | 321. | 318. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 189. | 186. | 183. | 181. | 179. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 151. | 147. | 144. | 141. | 139. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 COMBINED AT | | | | | | | | | |
| + | C25 | 2.09 | 1 | FLOW | 456. | 450. | 442. | 436. | 432. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R25 | 2.09 | 1 | FLOW | 448. | 440. | 433. | 426. | 422. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.19 | 11.18 | 11.17 | 11.16 | 11.16 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S8 | .03 | 1 | FLOW | 30. | 29. | 29. | 28. | 28. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S10 | .37 | 1 | FLOW | 240. | 236. | 232. | 228. | 226. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S12 | .03 | 1 | FLOW | 33. | 32. | 32. | 31. | 31. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SGC1 | .01 | 1 | FLOW | 5. | 5. | 5. | 5. | 4. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBGC1 | .01 | 1 | FLOW | 0. | 0. | 0. | 0. | 0. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.44 | 10.43 | 10.42 | 10.41 | 10.40 |
| | | | | TIME | 4.67 | 4.67 | 4.67 | 4.67 | 4.67 |
| 5 COMBINED AT | | | | | | | | | |
| + | C13 | 2.54 | 1 | FLOW | 482. | 475. | 467. | 459. | 456. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| DIVERSION TO | | | | | | | | | |
| + | DIV3L | 2.54 | 1 | FLOW | 14. | 14. | 13. | 12. | 12. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV3R | 2.54 | 1 | FLOW | 468. | 461. | 454. | 447. | 444. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET3L | .00 | 1 | FLOW | 14. | 14. | 13. | 12. | 12. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SQ | .01 | 1 | FLOW | 10. | 9. | 9. | 9. | 9. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBQ | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.75 | 10.74 | 10.73 | 10.72 | 10.71 |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |
| 2 COMBINED AT | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | C1B | .01 | 1 | FLOW | 15. | 14. | 14. | 13. | 13. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET2L | .00 | 1 | FLOW | 189. | 186. | 183. | 181. | 179. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | ST2 | .03 | 1 | FLOW | 14. | 14. | 14. | 13. | 13. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBT2 | .03 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.86 | 10.84 | 10.83 | 10.82 | 10.81 |
| | | | | TIME | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SS1 | .02 | 1 | FLOW | 9. | 9. | 9. | 9. | 9. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBS1 | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.76 | 10.75 | 10.74 | 10.73 | 10.73 |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |
| 3 COMBINED AT | | | | | | | | | |
| + | C2L | .05 | 1 | FLOW | 190. | 188. | 185. | 182. | 181. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| ROUTED TO | | | | | | | | | |
| + | R2L | .05 | 1 | FLOW | 188. | 185. | 183. | 180. | 179. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.37 | 11.36 | 11.35 | 11.34 | 11.33 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SR1 | .02 | 1 | FLOW | 10. | 10. | 10. | 10. | 10. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBR1 | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.75 | 4.75 | 4.58 | 4.58 | 4.58 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.75 | 10.74 | 10.73 | 10.72 | 10.71 |
| | | | | TIME | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SP1 | .02 | 1 | FLOW | 9. | 9. | 8. | 8. | 8. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBP1 | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.72 | 10.71 | 10.70 | 10.69 | 10.69 |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |

```
HYDROGRAPH AT
+                SM1      .02    1   FLOW        10.      9.      9.      9.      9.
                                     TIME       3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBM1     .02    1   FLOW         1.      1.      1.      1.      1.
                                     TIME       4.50    4.50    4.50    4.50    4.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.78   10.77   10.76   10.75   10.74
                                     TIME       4.58    4.58    4.58    4.58    4.58

 4 COMBINED AT
+                C26      .11    1   FLOW       190.    188.    185.    182.    181.
                                     TIME       4.08    4.08    4.08    4.08    4.08

 2 COMBINED AT
+                NULL     .12    1   FLOW       205.    202.    198.    195.    193.
                                     TIME       4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+                S30      .42    1   FLOW       244.    241.    237.    234.    232.
                                     TIME       3.50    3.50    3.50    3.50    3.50

ROUTED TO
+                R30      .42    1   FLOW       241.    237.    234.    231.    229.
                                     TIME       3.58    3.58    3.58    3.58    3.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.57   11.55   11.54   11.53   11.52
                                     TIME       3.58    3.58    3.58    3.58    3.58

HYDROGRAPH AT
+                SA1      .03    1   FLOW        15.     14.     14.     14.     14.
                                     TIME       3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBA1     .03    1   FLOW         1.      1.      1.      1.      1.
                                     TIME       4.92    4.92    4.92    4.92    4.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.86   10.84   10.83   10.82   10.81
                                     TIME       5.00    5.00    5.00    5.00    5.00

 2 COMBINED AT
+                C32      .45    1   FLOW       241.    238.    235.    231.    230.
                                     TIME       3.58    3.58    3.58    3.58    3.58

HYDROGRAPH AT
+                S40     1.60    1   FLOW       328.    322.    316.    310.    307.
                                     TIME       4.17    4.17    4.17    4.17    4.17

ROUTED TO
+                R48     1.60    1   FLOW       318.    315.    309.    304.    301.
                                     TIME       4.33    4.33    4.33    4.33    4.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.33   12.32   12.29   12.26   12.25
                                     TIME       4.33    4.33    4.33    4.33    4.33

HYDROGRAPH AT
+                S50      .53    1   FLOW       248.    244.    240.    237.    235.
                                     TIME       3.58    3.58    3.58    3.58    3.58

 2 COMBINED AT
```

```
+                C51      2.13    1   FLOW        428.     421.     413.     406.     402.
                                     TIME        4.08     4.08     4.08     4.08     4.08

 HYDROGRAPH AT
+                SJ1       .03    1   FLOW         17.      17.      17.      16.      16.
                                     TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+               RBJ1       .03    1   FLOW          1.       1.       1.       1.       1.
                                     TIME        5.42     5.42     5.42     5.42     5.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      10.79    10.78    10.76    10.75    10.75
                                     TIME        5.50     5.50     5.50     5.50     5.50

  2 COMBINED AT
+                C52      2.16    1   FLOW        429.     421.     414.     407.     403.
                                     TIME        4.08     4.08     4.08     4.08     4.08

 ROUTED TO
+                R51      2.16    1   FLOW        427.     420.     413.     405.     402.
                                     TIME        4.17     4.08     4.08     4.08     4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      12.33    12.32    12.29    12.27    12.25
                                     TIME        4.17     4.08     4.08     4.08     4.08

 HYDROGRAPH AT
+               SGC6       .02    1   FLOW          7.       7.       7.       7.       7.
                                     TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+              RBGC6       .02    1   FLOW          1.       1.       1.       0.       0.
                                     TIME        4.75     4.75     4.75     4.75     4.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      10.53    10.52    10.51    10.50    10.49
                                     TIME        4.83     4.83     4.83     4.92     4.92

 HYDROGRAPH AT
+                ST1       .03    1   FLOW         14.      14.      14.      13.      13.
                                     TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+               RBT1       .03    1   FLOW          1.       1.       1.       1.       1.
                                     TIME        4.92     4.92     4.92     4.92     4.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      10.86    10.84    10.83    10.82    10.81
                                     TIME        5.00     5.00     5.00     5.00     5.00

  4 COMBINED AT
+                C54      2.65    1   FLOW        586.     576.     567.     558.     553.
                                     TIME        3.75     3.75     3.75     3.75     3.75

 ROUTED TO
+                R54      2.65    1   FLOW        581.     571.     562.     553.     548.
                                     TIME        3.92     3.92     3.92     3.92     3.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.42    11.41    11.39    11.38    11.37
                                     TIME        3.92     3.92     3.92     3.92     3.92

 HYDROGRAPH AT
+                SU1       .05    1   FLOW         23.      22.      22.      22.      21.
                                     TIME        3.42     3.42     3.42     3.42     3.42
```

```
ROUTED TO
+                RBU1      .05    1   FLOW        1.      1.      1.      1.      1.
                                      TIME      4.92    4.92    5.17    5.25    4.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.20   11.18   11.16   11.15   11.14
                                      TIME      5.33    5.33    5.25    5.25    5.25

HYDROGRAPH AT
+                 SL1      .03    1   FLOW       14.     14.     14.     14.     14.
                                      TIME      3.42    3.42    3.42    3.42    3.42

ROUTED TO
+                RBL1      .03    1   FLOW        1.      1.      1.      1.      1.
                                      TIME      4.83    4.83    4.83    4.92    4.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.88   10.86   10.85   10.84   10.83
                                      TIME      5.00    5.00    5.00    5.00    5.00

HYDROGRAPH AT
+                 SN2      .01    1   FLOW        5.      5.      5.      5.      5.
                                      TIME      3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBN2      .01    1   FLOW        1.      1.      1.      1.      1.
                                      TIME      4.17    4.17    4.17    4.17    4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.56   10.56   10.55   10.54   10.54
                                      TIME      4.17    4.17    4.17    4.17    4.17

 4 COMBINED AT
+                 C56     2.73    1   FLOW      583.    574.    564.    555.    550.
                                      TIME      3.92    3.92    3.92    3.92    3.92

HYDROGRAPH AT
+                SGC3      .02    1   FLOW        6.      6.      6.      6.      6.
                                      TIME      3.50    3.50    3.50    3.50    3.50

ROUTED TO
+               RBGC3      .02    1   FLOW        0.      0.      0.      0.      0.
                                      TIME      5.67    5.58    5.58    5.58    5.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.42   10.41   10.41   10.40   10.39
                                      TIME      5.83    5.83    5.92    5.92    5.92

 3 COMBINED AT
+                NULL     2.87    1   FLOW      779.    767.    754.    741.    735.
                                      TIME      4.00    4.00    4.00    4.00    4.00

HYDROGRAPH AT
+                 S60     1.81    1   FLOW      471.    463.    455.    448.    444.
                                      TIME      4.08    4.08    4.08    4.08    4.08

DIVERSION TO
+               DIV4L     1.81    1   FLOW      284.    280.    276.    271.    269.
                                      TIME      4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+               DIV4R     1.81    1   FLOW      187.    183.    180.    176.    174.
                                      TIME      4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
```

```
+                    S70       .03    1   FLOW          31.      31.      31.      30.      30.
                                          TIME        3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                    S13       .01    1   FLOW           9.       9.       8.       8.       8.
                                          TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                   RB13       .01    1   FLOW           1.       1.       1.       1.       1.
                                          TIME        4.33     4.33     4.33     4.33     4.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       10.74    10.73    10.72    10.71    10.71
                                          TIME        4.42     4.42     4.42     4.42     4.42

  3 COMBINED AT
+                    C70      1.85    1   FLOW         189.     186.     182.     178.     177.
                                          TIME        4.08     4.08     4.08     4.08     4.08

 ROUTED TO
+                    R70      1.85    1   FLOW         188.     184.     181.     177.     175.
                                          TIME        4.17     4.17     4.17     4.17     4.17

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       11.37    11.36    11.34    11.32    11.32
                                          TIME        4.17     4.17     4.17     4.17     4.17

 HYDROGRAPH AT
+                    SB1       .03    1   FLOW          18.      18.      18.      17.      17.
                                          TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                   RBB1       .03    1   FLOW           1.       1.       1.       1.       1.
                                          TIME        5.58     5.58     5.58     5.58     5.58

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       10.79    10.78    10.77    10.76    10.76
                                          TIME        5.67     5.67     5.67     5.67     5.67

 HYDROGRAPH AT
+                   SGC4       .03    1   FLOW          14.      13.      13.      13.      12.
                                          TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBGC4       .03    1   FLOW           1.       1.       1.       1.       1.
                                          TIME        5.83     5.83     5.83     5.83     5.83

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       10.61    10.59    10.58    10.57    10.56
                                          TIME        6.08     6.08     6.08     6.08     6.08

  3 COMBINED AT
+                    C71      1.91    1   FLOW         189.     186.     182.     178.     177.
                                          TIME        4.17     4.17     4.17     4.17     4.17

 ROUTED TO
+                    R71      1.91    1   FLOW         187.     184.     180.     176.     175.
                                          TIME        4.25     4.25     4.25     4.25     4.25

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       11.37    11.35    11.34    11.32    11.31
                                          TIME        4.25     4.25     4.25     4.25     4.25

 HYDROGRAPH AT
+                    SN1       .06    1   FLOW          41.      40.      40.      39.      39.
                                          TIME        3.33     3.33     3.33     3.33     3.33
```

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ROUTED TO
+                RBN1      .06    1   FLOW        2.      2.      1.      1.      1.
                                      TIME      5.58    5.58    5.58    5.58    5.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.86   10.84   10.83   10.82   10.82
                                      TIME      5.83    5.83    5.83    5.83    5.83

 2 COMBINED AT
+                C62      1.97    1   FLOW      189.    185.    181.    178.    176.
                                      TIME      4.25    4.25    4.25    4.25    4.25

 2 COMBINED AT
+                NULL     4.85    1   FLOW      946.    931.    915.    899.    891.
                                      TIME      4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+                RET4L     .00    1   FLOW      284.    280.    276.    271.    269.
                                      TIME      4.08    4.08    4.08    4.08    4.08

DIVERSION TO
+                DIV5L     .00    1   FLOW      163.    161.    159.    157.    156.
                                      TIME      4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+                DIV5R     .00    1   FLOW      121.    119.    116.    114.    113.
                                      TIME      4.08    4.08    4.08    4.08    4.08

ROUTED TO
+                 R5R      .00    1   FLOW      121.    118.    116.    113.    112.
                                      TIME      4.08    4.08    4.08    4.08    4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.41   11.39   11.37   11.35   11.34
                                      TIME      4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+                 SC1      .03    1   FLOW       12.     12.     12.     12.     11.
                                      TIME      3.42    3.42    3.42    3.33    3.33

ROUTED TO
+                RBC1      .03    1   FLOW        1.      1.      1.      1.      1.
                                      TIME      5.33    5.33    5.33    5.50    5.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.55   10.54   10.53   10.53   10.52
                                      TIME      5.67    5.67    5.67    5.67    5.67

HYDROGRAPH AT
+                 SD1      .02    1   FLOW       12.     12.     12.     12.     12.
                                      TIME      3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBD1      .02    1   FLOW        1.      1.      1.      1.      1.
                                      TIME      4.75    4.75    4.75    4.75    4.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     10.78   10.77   10.75   10.74   10.74
                                      TIME      4.83    4.83    4.83    4.83    4.83

 3 COMBINED AT
+                C66      .05    1   FLOW      122.    119.    117.    115.    113.
                                      TIME      4.08    4.08    4.08    4.08    4.08

 2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | NULL | 4.90 | 1 | FLOW | 1068. | 1051. | 1032. | 1013. | 1004. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 163. | 161. | 159. | 157. | 156. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI2 | .01 | 1 | FLOW | 7. | 7. | 7. | 7. | 7. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.60 | 10.59 | 10.59 | 10.58 | 10.57 |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C5L | .01 | 1 | FLOW | 164. | 162. | 160. | 158. | 157. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .01 | 1 | FLOW | 163. | 161. | 159. | 157. | 156. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.68 | 11.67 | 11.66 | 11.65 | 11.64 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SE2 | .01 | 1 | FLOW | 5. | 5. | 5. | 5. | 5. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBE2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 10.60 | 10.59 | 10.58 | 10.57 | 10.57 |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .02 | 1 | FLOW | 164. | 162. | 160. | 158. | 157. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 4.92 | 1 | FLOW | 1232. | 1212. | 1192. | 1171. | 1161. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 31. | 30. | 29. | 29. | 28. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S90 | .06 | 1 | FLOW | 38. | 37. | 36. | 36. | 35. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S11 | .01 | 1 | FLOW | 10. | 9. | 9. | 9. | 9. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI1 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.75    10.74    10.73    10.72    10.71
                                      TIME        4.58     4.58     4.58     4.58     4.58

 3 COMBINED AT
+                 C90       .14    1   FLOW        69.      67.      66.      64.      64.
                                      TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                 R90       .14    1   FLOW        55.      53.      52.      51.      50.
                                      TIME        3.42     3.42     3.42     3.42     3.42

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.88    10.86    10.85    10.83    10.83
                                      TIME        3.42     3.42     3.42     3.42     3.42

HYDROGRAPH AT
+                 S94       .13    1   FLOW        72.      71.      69.      68.      67.
                                      TIME        3.25     3.25     3.25     3.25     3.25

HYDROGRAPH AT
+                 S100      .15    1   FLOW        78.      76.      74.      73.      72.
                                      TIME        3.25     3.25     3.25     3.25     3.25

HYDROGRAPH AT
+                 SH1       .03    1   FLOW        18.      18.      18.      17.      17.
                                      TIME        3.42     3.42     3.42     3.42     3.42

ROUTED TO
+                 RBH1      .03    1   FLOW         1.       1.       1.       1.       1.
                                      TIME        5.58     5.58     5.58     5.58     5.58

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.79    10.78    10.77    10.76    10.75
                                      TIME        5.67     5.67     5.67     5.67     5.67

 3 COMBINED AT
+                 C100      .31    1   FLOW       150.     147.     144.     141.     139.
                                      TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                 R100      .31    1   FLOW       145.     142.     139.     135.     134.
                                      TIME        3.33     3.33     3.33     3.33     3.33

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      11.57    11.55    11.53    11.51    11.50
                                      TIME        3.33     3.33     3.33     3.33     3.33

HYDROGRAPH AT
+                 SE1       .04    1   FLOW        25.      24.      24.      24.      24.
                                      TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                 RBE1      .04    1   FLOW         1.       1.       1.       1.       1.
                                      TIME        5.42     5.42     5.42     5.42     5.42

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.86    10.84    10.83    10.82    10.81
                                      TIME        5.67     5.67     5.67     5.67     5.67

HYDROGRAPH AT
+                 SGC5      .03    1   FLOW        10.      10.      10.       9.       9.
                                      TIME        3.50     3.50     3.50     3.50     3.50

ROUTED TO
```

```
+                RBGC5      .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.92    5.92    5.92    5.92    5.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.55   10.54   10.53   10.51   10.51
                                      TIME        6.17    6.17    6.17    6.17    6.17

 4 COMBINED AT
+                C103       .51    1   FLOW        195.    190.    185.    180.    178.
                                      TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                SGC2       .02    1   FLOW          8.      8.      8.      8.      8.
                                      TIME        3.50    3.50    3.50    3.50    3.50

 ROUTED TO
+                RBGC2      .02    1   FLOW          1.      1.      1.      1.      0.
                                      TIME        5.67    5.58    5.58    5.58    5.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.54   10.52   10.51   10.50   10.50
                                      TIME        5.83    5.83    5.83    5.83    5.83

 HYDROGRAPH AT
+                SO1        .01    1   FLOW          8.      7.      7.      7.      7.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBO1       .01    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        4.42    4.42    4.42    4.42    4.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.71   10.70   10.69   10.68   10.67
                                      TIME        4.50    4.50    4.50    4.50    4.50

 2 COMBINED AT
+                CO         .04    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        4.83    4.83    4.83    4.83    4.83

 HYDROGRAPH AT
+                SM2        .03    1   FLOW         14.     14.     14.     14.     13.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBM2       .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.08    5.08    5.08    5.00    5.00

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.81   10.79   10.78   10.77   10.77
                                      TIME        5.17    5.17    5.17    5.17    5.17

 2 COMBINED AT
+                C28        .07    1   FLOW          2.      2.      2.      2.      2.
                                      TIME        4.92    4.92    4.92    4.92    4.92

 2 COMBINED AT
+                NULL       .58    1   FLOW        196.    191.    186.    181.    178.
                                      TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                SK1        .03    1   FLOW         16.     16.     16.     16.     15.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBK1       .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.17    5.17    5.17    5.17    5.17
```

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.81    10.80    10.79    10.78    10.77
                                      TIME        5.33     5.33     5.33     5.33     5.33

 HYDROGRAPH AT
+                   SF1      .02  1   FLOW         12.      11.      11.      11.      11.
                                      TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                   RBF1     .02  1   FLOW          1.       1.       1.       1.       1.
                                      TIME        4.67     4.67     4.67     4.67     4.67

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.72    10.71    10.70    10.69    10.69
                                      TIME        4.83     4.83     4.83     4.83     4.83

  2 COMBINED AT
+                   NULL     .04  1   FLOW          2.       2.       1.       1.       1.
                                      TIME        4.92     4.92     4.92     4.92     4.92

 HYDROGRAPH AT
+                   SG1      .03  1   FLOW         19.      19.      19.      18.      18.
                                      TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                   RBG1     .03  1   FLOW          1.       1.       1.       1.       1.
                                      TIME        5.58     5.58     5.58     5.58     5.58

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.80    10.79    10.77    10.76    10.76
                                      TIME        5.83     5.83     5.83     5.83     5.83

 HYDROGRAPH AT
+                   SG2      .03  1   FLOW         19.      19.      19.      18.      18.
                                      TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                   RBG2     .03  1   FLOW          1.       1.       1.       1.       1.
                                      TIME        5.58     5.58     5.58     5.58     5.58

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      10.80    10.79    10.77    10.76    10.76
                                      TIME        5.83     5.83     5.83     5.83     5.83

  2 COMBINED AT
+                   NULL     .06  1   FLOW          2.       2.       2.       2.       2.
                                      TIME        5.67     5.67     5.67     5.67     5.67


*** NORMAL END OF HEC-1 ***
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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990             *
*             VERSION 4.0               *
*                                       *
*  RUN DATE  04/01/1993  TIME  07:33:25 *
*                                       *
*****************************************
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```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX        XXX
```

10 YEAR Event - Post Development Conditions

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        DWP10P
  2           ID        DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-ZN-92
  3           ID        10 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT       5                     300
 19           IO       5       0
 20           JR    PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                    0.56    1.02    1.65    1.87    2.01    2.29
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK    SCOM
  47          KM    SUB-BASIN SCOM: ON-SITE
  48          BA    .020
  49          LS              85      50
  50          UD    .252

  51          KK   RBCOM
  52          KM     RETENTION BASIN
  53          RS       1    ELEV      10
  54          SV       0     1.0     2.8     10.
  55          SE      10     11.     13.     15.
  56          SQ       0     1.0     1.5    200.

  57          KK     C24
  58          KM     COMBINE S14, S16, S20/R20, & SCOM
  59          HC       4

  60          KK   DIV1R
  61          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  62          DT   DIV1L
  63          DI      0.      9.    132.    458.   1140.   2174.   3491.
  64          DQ      0.      0.     48.    223.    647.   1330.   2208.

  65          KK   RET1L
  66          KM    RETRIEVE DIV1L
  67          DR   DIV1L

  68          KK   DIV2R
  69          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  70          DT   DIV2L
  71          DI      0.      8.     50.    188.    370.    697.   1376.
  72          DQ      0.      8.     38.    119.    203.    361.    613.

  73          KK     C25
  74          KM    COMBINE DIV1R & DIV2R
  75          HC       2

  76          KK     R25
  77          KM    ROUTE C25 THRU SGC1
  78          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  79          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  80          KM      OVERBANKS = 50':(TYPICAL)
  81          RS       1    ELEV      10
  82          RC    .055    .035    .055    3550    .017
  83          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
  84          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

  85          KK      S8
  86          KM    SUB-BASIN S8: OFF-SITE
  87          BA    .031
  88          LS              85      26.
  89          UD    .110
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  90          KK     S10
  91          KM    SUB-BASIN S10: OFF-SITE
  92          BA    .368
  93          LS              87     19.
  94          UD    .252

  95          KK     S12
  96          KM    SUB-BASIN S12: OFF-SITE
  97          BA    .034
  98          LS              85     32.
  99          UD    .127

 100          KK    SGC1
 101          KM    SUB-BASIN SGC1: ON-SITE
 102          BA    .012
 103          LS              85
 104          UD    .267

 105          KK   RBGC1
 106          KM     RETENTION BASIN
 107          RS       1    ELEV      10
 108          SV       0      .5     1.0     10.
 109          SE      10     11.     13.     15.
 110          SQ       0     1.0     1.5    200.

 111          KK     C13
 112          KM     COMBINE S8, S10, S12, SGC1, & R25: WASH 1
 113          HC       5

 114          KK   DIV3R
 115          KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
 116          KM              DIV2L - WASH 1B
 117          DT   DIV3L
 118          DI      0.    315.    550.    875.   1280.   1975.
 119          DQ      0.     0.1     20.     65.    110.    380.

 120          KK   RET3L
 121          KM     RETRIEVE DIV3L:WASH 1B
 122          DR   DIV3L

 123          KK      SQ
 124          KM    SUB-BASIN SQ: ON-SITE
 125          BA    .015
 126          LS              85     35.
 127          UD    .301

 128          KK     RBQ
 129          KM     RETENTION BASIN
 130          RS       1    ELEV      10
 131          SV       0      .7     1.4     10.
 132          SE      10     11.     13.     15.
 133          SQ       0     1.0     1.5    200.
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 134          KK     C1B
 135          KM      WASH 1B
 136          HC       2

 137          KK   RET2L
 138          KM     RETRIEVE DIV2L
 139          DR   DIV2L

 140          KK     ST2
 141          KM    SUB-BASIN ST2: ON-SITE
 142          BA    .029
 143          LS                77     35.
 144          UD    .315

 145          KK    RBT2
 146          KM     RETENTION BASIN
 147          RS       1    ELEV      10
 148          SV       0     1.0     2.0     10.
 149          SE      10     11.     13.     15.
 150          SQ       0     1.0     1.5    200.

 151          KK     SS1
 152          KM    SUB-BASIN SS1: ON-SITE
 153          BA    .019
 154          LS                77     35.
 155          UD    .309

 156          KK    RBS1
 157          KM     RETENTION BASIN
 158          RS       1    ELEV      10
 159          SV       0      .7     1.3     10.
 160          SE      10     11.     13.     15.
 161          SQ       0     1.0     1.5    200.

 162          KK     C2L
 163          KM     COMBINE
 164          HC       3

 165          KK     R2L
 166          KM     ROUTE C2L
 167          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 168          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 169          KM      OVERBANKS = 40':(TYPICAL)
 170          RS       2    ELEV      10
 171          RC    .055    .035    .055    3850    .017
 172          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 173          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 174          KK     SR1
 175          KM    SUB-BASIN SR1: ON-SITE
 176          BA    .021
 177          LS                77     35.
 178          UD    .318
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 179          KK    RBR1
 180          KM     RETENTION BASIN
 181          RS       1    ELEV      10
 182          SV       0      .8     1.5     10.
 183          SE      10     11.     13.     15.
 184          SQ       0     1.0     1.5    200.

 185          KK     SP1
 186          KM    SUB-BASIN SP: ON-SITE
 187          BA    .018
 188          LS              77     35.
 189          UD    .313

 190          KK    RBP1
 191          KM     RETENTION BASIN
 192          RS       1    ELEV      10
 193          SV       0      .7     1.3     10.
 194          SE      10     11.     13.     15.
 195          SQ       0     1.0     1.5    200.

 196          KK     SM1
 197          KM    SUB-BASIN SM1: ON-SITE
 198          BA    .019
 199          LS              78     35.
 200          UD    .305

 201          KK    RBM1
 202          KM     RETENTION BASIN
 203          RS       1    ELEV      10
 204          SV       0      .7     1.4     10.
 205          SE      10     11.     13.     15.
 206          SQ       0     1.0     1.5    200.

 207          KK     C26
 208          KM    COMBINE R2L, RBR, RBP, RBM1 : WASH 1B
 209          HC       4

 210          KK    NULL
 211          HC       2

 212          KK     S30
 213          KM    SUB-BASIN S30: OFF-SITE
 214          BA     .42
 215          LS              88     38.
 216          UD    .452

 217          KK     R30
 218          KM    ROUTE S30 THRU S32: WASH 2A
 219          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 220          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 221          KM      OVERBANKS = 40':(TYPICAL)
 222          RS       1    ELEV      10
 223          RC    .055    .035    .055    2250    .018
 224          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 225          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 226          KK     SA1
 227          KM    SUB-BASIN SA: ON-SITE
 228          BA    .027
 229          LS              80     35.
 230          UD    .297

 231          KK    RBA1
 232          KM     RETENTION BASIN
 233          RS       1    ELEV      10
 234          SV       0     1.0     2.1     10.
 235          SE      10     11.     13.     15.
 236          SQ       0     1.0     1.5    200.

 237          KK     C32
 238          KM    COMBINE S30/R30 & RBA: WASH 2A
 239          HC       2

 240          KK     S40
 241          KM    SUB-BASIN S40: OFF-SITE
 242          BA    1.60
 243          LS              84     15.
 244          UD    .985

 245          KK     R48
 246          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 247          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 248          KM      OVERBANKS = 40':(TYPICAL)
 249          RS       2    ELEV      10
 250          RC    .055    .035    .055    8400    .023
 251          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 252          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 253          KK     S50
 254          KM    SUB-BASIN S50: OFF-SITE
 255          BA     .53
 256          LS              86     35.
 257          UD    .535

 258          KK     C51
 259          KM    COMBINE R48/S40 & S50: WASH 2
 260          HC       2

 261          KK     SJ1
 262          KM    SUB-BASIN SJ: ON-SITE
 263          BA    .027
 264          LS              85     35.
 265          UD    .305
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 266          KK    RBJ1
 267          KM     RETENTION BASIN
 268          RS       1    ELEV      10
 269          SV       0     1.3     2.5     10.
 270          SE      10     11.     13.     15.
 271          SQ       0     1.0     1.5    200.

 272          KK     C52
 273          HC       2

 274          KK     R51
 275          KM    ROUTE C51 THRU BASIN 54: WASH 2
 276          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 277          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 278          KM      OVERBANKS = 40':(TYPICAL)
 279          RS       2    ELEV      10
 280          RC    .055    .035    .055    3050    .015
 281          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 282          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 283          KK    SGC6
 284          KM    SUB-BASIN SGC6: ON-SITE
 285          BA    .017
 286          LS              85
 287          UD    .251

 288          KK   RBGC6
 289          KM     RETENTION BASIN
 290          RS       1    ELEV      10
 291          SV       0      .6     1.2     10.
 292          SE      10     11.     13.     15.
 293          SQ       0     1.0     1.5    200.

 294          KK     ST1
 295          KM    SUB-BASIN ST1: ON-SITE
 296          BA    .029
 297          LS              77     35.
 298          UD    .315

 299          KK    RBT1
 300          KM     RETENTION BASIN
 301          RS       1    ELEV      10
 302          SV       0     1.0     2.0     10.
 303          SE      10     11.     13.     15.
 304          SQ       0     1.0     1.5    200.

 305          KK     C54
 306          KM    COMBINE RBT1,RBGC6, C51, C32: WASH 2
 307          HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 308          KK     R54
 309          KM    ROUTE C54 THRU BASIN 56: WASH 2
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 50':(TYPICAL)
 313          RS       2    ELEV      10
 314          RC    .055    .035    .055    4150    .016
 315          RX   48.5    51.5   101.5     104     164   166.5   216.5   219.5
 316          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     SU1
 318          KM    SUB-BASIN SU: ON-SITE
 319          BA    .048
 320          LS              77     35.
 321          UD    .330

 322          KK    RBU1
 323          KM     RETENTION BASIN
 324          RS       1    ELEV      10
 325          SV       0     1.2     3.5     10.
 326          SE      10     11.     13.     15.
 327          SQ       0     1.2     1.5    200.

 328          KK     SL1
 329          KM    SUB-BASIN SL: ON-SITE
 330          BA    .029
 331          LS              78     35.
 332          UD    .318

 333          KK    RBL1
 334          KM     RETENTION BASIN
 335          RS       1    ELEV      10
 336          SV       0     1.0     2.1     10.
 337          SE      10     11.     13.     15.
 338          SQ       0     1.0     1.5    200.

 339          KK     SN2
 340          KM    SUB-BASIN SN2: ON-SITE
 341          BA    .007
 342          LS              85     35.
 343          UD    .276

 344          KK    RBN2
 345          KM     RETENTION BASIN
 346          RS       1    ELEV      10
 347          SV       0      .4      .7     10.
 348          SE      10     11.     13.     15.
 349          SQ       0     1.0     1.5    200.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 350          KK     C56
 351          KM    COMBINE R54,RBL,RBN2,RBU: WASH 2
 352          HC       4

 353          KK    SGC3
 354          KM    SUB-BASIN GC3: ON-SITE
 355          BA    .019
 356          LS              85
 357          UD    .401

 358          KK   RBGC3
 359          KM    RETENTION BASIN
 360          RS       1    ELEV      10
 361          SV       0      .9     1.7     10.
 362          SE      10     11.     13.     15.
 363          SQ       0     1.0     1.5    200.

 364          KK    NULL
 365          HC       3

 366          KK     S60
 367          KM    SUB-BASIN S60: OFF-SITE
 368          BA    1.81
 369          LS              87     16.
 370          UD    .933

 371          KK   DIV4R
 372          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 373          DT   DIV4L
 374          DI      0.    294.    633.   1081.   1186.   2008.
 375          DQ      0.    188.    372.    606.    530.   1028.

 376          KK     S70
 377          KM    SUB-BASIN S70: OFF-SITE
 378          BA    .029
 379          LS              85     40.
 380          UD    .120

 381          KK     SI3
 382          KM    SUB-BASIN SI3: ON-SITE
 383          BA    .013
 384          LS              85     35.
 385          UD    .286

 386          KK    RBI3
 387          KM     RETENTION BASIN
 388          RS       1    ELEV      10
 389          SV       0      .6     1.2     10.
 390          SE      10     11.     13.     15.
 391          SQ       0     1.0     1.5    200.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 392          KK     C70
 393          KM    COMBINE DIV4R,RBI3 & S70: WASH 3
 394          HC       3

 395          KK     R70
 396          KM    ROUTE C70
 397          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 398          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 399          KM      OVERBANKS = 40':(TYPICAL)
 400          RS       2    ELEV      10
 401          RC    .055    .035    .055    3000    .017
 402          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 403          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 404          KK     SB1
 405          KM    SUB-BASIN SB1: ON-SITE
 406          BA    .030
 407          LS              84     35.
 408          UD    .307

 409          KK    RBB1
 410          KM     RETENTION BASIN
 411          RS       1    ELEV      10
 412          SV       0     1.4     2.7     10.
 413          SE      10     11.     13.     15.
 414          SQ       0     1.0     1.5    200.

 415          KK    SGC4
 416          KM    SUB-BASIN GC4: ON-SITE
 417          BA    .032
 418          LS              85
 419          UD    .251

 420          KK   RBGC4
 421          KM     RETENTION BASIN
 422          RS       1    ELEV      10
 423          SV       0     1.1     2.2     10.
 424          SE      10     11.     13.     15.
 425          SQ       0     1.0     1.5    200.

 426          KK     C71
 427          KM        COMBINE R70, RBB,RBGC4:WASH 3
 428          HC       3

 429          KK     R71
 430          KM    ROUTE C71
 431          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 432          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 433          KM      OVERBANKS = 40':(TYPICAL)
 434          RS       2    ELEV      10
 435          RC    .055    .035    .055    3850    .017
 436          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 437          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 438          KK     SN1
 439          KM    SUB-BASIN SN1: ON-SITE
 440          BA    .060
 441          LS              85     35.
 442          UD    .276

 443          KK    RBN1
 444          KM     RETENTION BASIN
 445          RS       1    ELEV      10
 446          SV       0     2.7     5.5     10.
 447          SE      10     11.     13.     15.
 448          SQ       0     1.8     2.0    200.

 449          KK     C62
 450          KM    COMBINE RBN1 & R71: WASH 3
 451          HC       2

 452          KK    NULL
 453          HC       2

 454          KK   RET4L
 455          KM    RETRIEVE DIV4L: WASH 4
 456          DR   DIV4L

 457          KK   DIV5R
 458          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 459          DT   DIV5L
 460          DI      0.     11.     71.    204.    665.   1556.   3038.
 461          DQ      0.      0.     24.    128.    329.    762.   1656.

 462          KK     R5R
 463          KM    ROUTE DIV5R THRU S66: WASH 4A
 464          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 465          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 466          KM      OVERBANKS = 40':(TYPICAL)
 467          RS       1    ELEV      10
 468          RC    .055    .035    .055    1470    .018
 469          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 470          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 471          KK     SC1
 472          KM    SUB-BASIN SC1: ON-SITE
 473          BA    .025
 474          LS              77     35.
 475          UD    .309

 476          KK    RBC1
 477          KM     RETENTION BASIN
 478          RS       1    ELEV      10
 479          SV       0     1.4     2.7     10.
 480          SE      10     11.     13.     15.
 481          SQ       0     1.0     1.5    200.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 482          KK     SD1
 483          KM    SUB-BASIN SS1: ON-SITE
 484          BA    .024
 485          LS              77     35.
 486          UD    .278

 487          KK    RBD1
 488          KM     RETENTION BASIN
 489          RS       1    ELEV      10
 490          SV       0      .9     1.7     10.
 491          SE      10     11.     13.     15.
 492          SQ       0     1.0     1.5    200.

 493          KK     C66
 494          KM    COMBINE RBC1,RBD1, R5R: WASH 4A
 495          HC       3

 496          KK    NULL
 497          HC       2

 498          KK   RET5L
 499          KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
 500          DR   DIV5L

 501          KK     SI2
 502          KM    SUB-BASIN SI2: ON-SITE
 503          BA    .015
 504          LS              77     35.
 505          UD    .303

 506          KK    RBI2
 507          KM     RETENTION BASIN
 508          RS       1    ELEV      10
 509          SV       0      .7     1.4     10.
 510          SE      10     11.     13.     15.
 511          SQ       0     1.0     1.5    200.

 512          KK     C5L
 513          HC       2

 514          KK     R5L
 515          KM    ROUTE DIV5L THRU S68: WASH 4
 516          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 517          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 518          KM      OVERBANKS = 40':(TYPICAL)
 519          RS       1    ELEV      10
 520          RC    .055    .035    .055    1750    .018
 521          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 522          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 523          KK     SE2
 524          KM    SUB-BASIN SE2: ON-SITE
 525          BA    .009
 526          LS              85     35.
 527          UD    .336

 528          KK    RBE2
 529          KM     RETENTION BASIN
 530          RS       1    ELEV      10
 531          SV       0      .5      .9     10.
 532          SE      10     11.     13.     15.
 533          SQ       0     1.0     1.5    200.

 534          KK     C68
 535          KM    COMBINE RBE2 & R5L: WASH 4
 536          HC       2

 537          KK    NULL
 538          HC       2

 539          KK     S80
 540          KM    SUB-BASIN S80: OFF-SITE
 541          BA    .058
 542          LS              85
 543          UD    .166

 544          KK     S90
 545          KM    SUB-BASIN S90: OFF-SITE
 546          BA    .063
 547          LS              86
 548          UD    .152

 549          KK     SI1
 550          KM    SUB-BASIN SI1: ON-SITE
 551          BA    .015
 552          LS              85     35.
 553          UD    .301

 554          KK    RBI1
 555          KM     RETENTION BASIN
 556          RS       1    ELEV      10
 557          SV       0      .7     1.4     10.
 558          SE      10     11.     13.     15.
 559          SQ       0     1.0     1.5    200.

 560          KK     C90
 561          HC       3

 562          KK     R90
 563          KM    ROUTE C90
 564          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 565          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 566          KM      OVERBANKS = 40':(TYPICAL)
 567          RS       2    ELEV      10
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 568          RC    .055    .035    .055    3500    .018
 569          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 570          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 571          KK     S94
 572          KM    SUB-BASIN S94: OFF-SITE
 573          BA    .132
 574          LS              86
 575          UD    .186

 576          KK    S100
 577          KM    SUB-BASIN S100: OFF-SITE
 578          BA    .148
 579          LS              86
 580          UD    .196

 581          KK     SH1
 582          KM    SUB-BASIN SH: ON-SITE
 583          BA    .029
 584          LS              85     35.
 585          UD    .313

 586          KK    RBH1
 587          KM     RETENTION BASIN
 588          RS       1    ELEV      10
 589          SV       0     1.4     2.7     10.
 590          SE      10     11.     13.     15.
 591          SQ       0     1.0     1.5    200.

 592          KK    C100
 593          HC       3

 594          KK    R100
 595          KM    ROUTE C100 :WASH 6
 596          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 597          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 598          KM      OVERBANKS = 40':(TYPICAL)
 599          RS       2    ELEV      10
 600          RC    .055    .035    .055    2400    .018
 601          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 602          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 603          KK     SE1
 604          KM    SUB-BASIN SE1: ON-SITE
 605          BA    .038
 606          LS              85     35.
 607          UD    .293

 608          KK    RBE1
 609          KM     RETENTION BASIN
 610          RS       1    ELEV      10
 611          SV       0     1.7     3.5     10.
 612          SE      10     11.     13.     15.
 613          SQ       0     1.2     2.0    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 614          KK    SGC5
 615          KM    SUB-BASIN GC5: ON-SITE
 616          BA    .029
 617          LS              85
 618          UD    .351

 619          KK   RBGC5
 620          KM     RETENTION BASIN
 621          RS       1    ELEV      10
 622          SV       0     1.1     2.1     10.
 623          SE      10     11.     13.     15.
 624          SQ       0     1.0     1.5    200.

 625          KK    C103
 626          KM        COMBINE RBGC5,RBE1,R90,R100:WASH 6
 627          HC       4

 628          KK    SGC2
 629          KM    SUB-BASIN GC2: ON-SITE
 630          BA    .024
 631          LS              85
 632          UD    .359

 633          KK   RBGC2
 634          KM     RETENTION BASIN
 635          RS       1    ELEV      10
 636          SV       0      .9     1.7     10.
 637          SE      10     11.     13.     15.
 638          SQ       0     1.0     1.5    200.

 639          KK     SO1
 640          KM    SUB-BASIN SO: ON-SITE
 641          BA    .014
 642          LS              81     35.
 643          UD    .315

 644          KK    RBO1
 645          KM     RETENTION BASIN
 646          RS       1    ELEV      10
 647          SV       0      .6     1.2     10.
 648          SE      10     11.     13.     15.
 649          SQ       0     1.0     1.5    200.

 650          KK      CO
 651          HC       2

 652          KK     SM2
 653          KM    SUB-BASIN SM2: ON-SITE
 654          BA    .029
 655          LS              78     35.
 656          UD    .322
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 657          KK    RBM2
 658          KM     RETENTION BASIN
 659          RS       1    ELEV      10
 660          SV       0     1.1     2.1     10.
 661          SE      10     11.     13.     15.
 662          SQ       0     1.0     1.5    200.

 663          KK     C28
 664          HC       2

 665          KK    NULL
 666          HC       2

 667          KK     SK1
 668          KM    SUB-BASIN SK1: ON-SITE
 669          BA    .026
 670          LS              85     35.
 671          UD    .318

 672          KK    RBK1
 673          KM     RETENTION BASIN
 674          RS       1    ELEV      10
 675          SV       0     1.2     2.4     10.
 676          SE      10     11.     13.     15.
 677          SQ       0     1.0     1.5    200.

 678          KK     SF1
 679          KM    SUB-BASIN SF1: ON-SITE
 680          BA    .018
 681          LS              85     35.
 682          UD    .297

 683          KK    RBF1
 684          KM     RETENTION BASIN
 685          RS       1    ELEV      10
 686          SV       0      .9     1.7     10.
 687          SE      10     11.     13.     15.
 688          SQ       0     1.0     1.5    200.

 689          KK    NULL
 690          HC       2

 691          KK     SG1
 692          KM    SUB-BASIN SG1: ON-SITE
 693          BA    .031
 694          LS              85     35.
 695          UD    .318

 696          KK    RBG1
 697          KM     RETENTION BASIN
 698          RS       1    ELEV      10
 699          SV       0     1.5     2.9     10.
 700          SE      10     11.     13.     15.
 701          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 702          KK     SG2
 703          KM    SUB-BASIN SG2: ON-SITE
 704          BA    .031
 705          LS              85     35.
 706          UD    .318

 707          KK    RBG2
 708          KM     RETENTION BASIN
 709          RS       1    ELEV      10
 710          SV       0     1.5     2.9     10.
 711          SE      10     11.     13.     15.
 712          SQ       0     1.0     1.5    200.

 713          KK    NULL
 714          HC       2
 715          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
               .
               .
  27           .         S16
               .           .
               .           .
  32           .           .        S20
               .           .          V
               .           .          V
  37           .           .        R20
               .           .          .
               .           .          .
  46           .           .          .        SCOM
               .           .          .          V
               .           .          .          V
  51           .           .          .       RBCOM
               .           .          .          .
               .           .          .          .
  57         C24.................................
               .
               .
  62           .------->   DIV1L
  60       DIV1R
               .
               .
  67           .           .<-------   DIV1L
  65           .       RET1L
               .           .
               .           .
  70           .           .------->   DIV2L
  68           .       DIV2R
               .           .
               .           .
  73         C25............
               V
               V
  76         R25
               .
               .
  85           .          S8
               .           .
               .           .
  90           .           .        S10
               .           .          .
               .           .          .
  95           .           .          .        S12
               .           .          .          .
               .           .          .          .
 100           .           .          .          .        SGC1
               .           .          .          .          V
               .           .          .          .          V
 105           .           .          .          .      RBGC1
               .           .          .          .          .
               .           .          .          .          .
 111         C13.............................................
               .
               .
 117           .------->   DIV3L
 114       DIV3R
```

```
            .
            .
122         .          .<-------   DIV3L
120         .      RET3L
            .          .
            .          .
123         .          .         SQ
            .          .          V
            .          .          V
128         .          .        RBQ
            .          .          .
            .          .          .
134         .        C1B............
            .          .
            .          .
139         .          .          .<-------   DIV2L
137         .          .     RET2L
            .          .          .
            .          .          .
140         .          .          .        ST2
            .          .          .          V
            .          .          .          V
145         .          .          .       RBT2
            .          .          .          .
            .          .          .          .
151         .          .          .          .        SS1
            .          .          .          .          V
            .          .          .          .          V
156         .          .          .          .       RBS1
            .          .          .          .          .
            .          .          .          .          .
162         .          .        C2L.......................
            .          .          V
            .          .          V
165         .          .        R2L
            .          .          .
            .          .          .
174         .          .          .        SR1
            .          .          .          V
            .          .          .          V
179         .          .          .       RBR1
            .          .          .          .
            .          .          .          .
185         .          .          .          .        SP1
            .          .          .          .          V
            .          .          .          .          V
190         .          .          .          .       RBP1
            .          .          .          .          .
            .          .          .          .          .
196         .          .          .          .          .        SM1
            .          .          .          .          .          V
            .          .          .          .          .          V
201         .          .          .          .          .       RBM1
            .          .          .          .          .          .
            .          .          .          .          .          .
207         .          .        C26.................................
            .          .          .
            .          .          .
210         .       NULL............
            .          .
            .          .
212         .          .        S30
            .          .          V
            .          .          V
217         .          .        R30
            .          .          .
```

```
226          SA1
               V
               V
231          RBA1
               .
               .
237     C32............
               .
               .
240          S40
               V
               V
245          R48
               .
               .
253                 S50
                      .
                      .
258          C51............
               .
               .
261                 SJ1
                      V
                      V
266                 RBJ1
                      .
                      .
272          C52............
               V
               V
274          R51
               .
               .
283                 SGC6
                      V
                      V
288                 RBGC6
                      .
                      .
294                           ST1
                                V
                                V
299                           RBT1
                                .
                                .
305     C54.................................
          V
          V
308     R54
               .
               .
317          SU1
               V
               V
322          RBU1
               .
               .
328                 SL1
                      V
                      V
333                 RBL1
                      .
                      .
339                           SN2
                                V
```

```
                                                    V
344                                                 RBN2
                                                     .
                                                     .
350                 C56.................................
                     .
                     .
353                                  SGC3
                                       V
                                       V
358                                 RBGC3
                                       .
                                       .
364             NULL.......................
                     .
                     .
366                 S60
                     .
                     .
373                  .-------->   DIV4L
371                DIV4R
                     .
                     .
376                                  S70
                                       .
                                       .
381                                                 SI3
                                                     V
                                                     V
386                                                RBI3
                                                     .
                                                     .
392                 C70.......................
                     V
                     V
395                 R70
                     .
                     .
404                                  SB1
                                       V
                                       V
409                                 RBB1
                                       .
                                       .
415                                                 SGC4
                                                     V
                                                     V
420                                                RBGC4
                                                     .
                                                     .
426                 C71.......................
                     V
                     V
429                 R71
                     .
                     .
438                                  SN1
                                       V
                                       V
443                                 RBN1
                                       .
                                       .
449                 C62............
                     .
                     .
452             NULL............
```

```
          .         .
          .         .
456       .         .          .<-------   DIV4L
454       .         .      RET4L
          .         .          .
          .         .          .
459       .         .          .------->   DIV5L
457       .         .      DIV5R
          .         .          V
          .         .          V
462       .         .        R5R
          .         .          .
          .         .          .
471       .         .          .        SC1
          .         .          .          V
          .         .          .          V
476       .         .          .       RBC1
          .         .          .          .
          .         .          .          .
482       .         .          .          .        SD1
          .         .          .          .          V
          .         .          .          .          V
487       .         .          .          .       RBD1
          .         .          .          .          .
          .         .          .          .          .
493       .         .        C66.......................
          .         .          .
          .         .          .
496       .      NULL............
          .         .
          .         .
500       .         .          .<-------   DIV5L
498       .         .      RET5L
          .         .          .
          .         .          .
501       .         .          .        SI2
          .         .          .          V
          .         .          .          V
506       .         .          .       RBI2
          .         .          .          .
          .         .          .          .
512       .         .        C5L............
          .         .          V
          .         .          V
514       .         .        R5L
          .         .          .
          .         .          .
523       .         .          .        SE2
          .         .          .          V
          .         .          .          V
528       .         .          .       RBE2
          .         .          .          .
          .         .          .          .
534       .         .        C68............
          .         .          .
          .         .          .
537       .      NULL............
          .         .
          .         .
539       .         .        S80
          .         .          .
          .         .          .
544       .         .          .        S90
          .         .          .          .
          .         .          .          .
549       .         .          .          .        SI1
```

```
                                                V
                                                V
554                                           RBI1
                                                .
                                                .
560                                 C90.........................
                                     V
                                     V
562                                 R90
                                     .
                                     .
571                                          S94
                                              .
                                              .
576                                           .          S100
                                              .            .
                                              .            .
581                                           .            .          SH1
                                              .            .           V
                                              .            .           V
586                                           .            .         RBH1
                                              .            .           .
                                              .            .           .
592                                          C100.........................
                                              V
                                              V
594                                          R100
                                              .
                                              .
603                                           .           SE1
                                              .            V
                                              .            V
608                                           .          RBE1
                                              .            .
                                              .            .
614                                           .            .          SGC5
                                              .            .           V
                                              .            .           V
619                                           .            .         RBGC5
                                              .            .           .
                                              .            .           .
625                                 C103.......................................
                                     .
                                     .
628                                          SGC2
                                              V
                                              V
633                                         RBGC2
                                              .
                                              .
639                                           .           SO1
                                              .            V
                                              .            V
644                                           .          RBO1
                                              .            .
                                              .            .
650                                           CO............
                                              .
                                              .
652                                           .           SM2
                                              .            V
                                              .            V
657                                           .          RBM2
                                              .            .
                                              .            .
663                                           C28...........
```

```
                .         .         .         .
                .         .         .         .
665             .         .      NULL............
                .         .         .
                .         .         .
667             .         .         .      SK1
                .         .         .        V
                .         .         .        V
672             .         .         .      RBK1
                .         .         .         .
                .         .         .         .
678             .         .         .         .        SF1
                .         .         .         .          V
                .         .         .         .          V
683             .         .         .         .       RBF1
                .         .         .         .          .
                .         .         .         .          .
689             .         .         .      NULL............
                .         .         .         .
                .         .         .         .
691             .         .         .         .        SG1
                .         .         .         .          V
                .         .         .         .          V
696             .         .         .         .       RBG1
                .         .         .         .          .
                .         .         .         .          .
702             .         .         .         .          .        SG2
                .         .         .         .          .          V
                .         .         .         .          .          V
707             .         .         .         .          .       RBG2
                .         .         .         .          .          .
                .         .         .         .          .          .
713             .         .         .         .       NULL............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
* RUN DATE  04/01/1993  TIME  07:33:25 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    DWP10P
                    DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-ZN-92
                    10 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %.
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                   IPRNT          5  PRINT CONTROL
                   IPLOT          0  PLOT CONTROL
                   QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                    NMIN          5  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1   0  STARTING DATE
                   ITIME       0000  STARTING TIME
                      NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2   0  ENDING DATE
                  NDTIME       0055  ENDING TIME
                   ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

   JP         MULTI-PLAN OPTION
                   NPLAN          1  NUMBER OF PLANS

   JR         MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
               1.00       .99       .98       .97       .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| | | | | | RATIOS APPLIED TO PRECIPITATION | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OPERATION | STATION | AREA | PLAN | | RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 180. | 177. | 175. | 172. | 171. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 70. | 69. | 68. | 67. | 67. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 1105. | 1090. | 1074. | 1059. | 1051. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 1102. | 1087. | 1071. | 1056. | 1049. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.06 | 12.04 | 12.02 | 12.00 | 12.00 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SCOM | .02 | 1 | FLOW | 27. | 27. | 27. | 26. | 26. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBCOM | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 5.17 | 5.25 | 5.25 | 4.92 | 4.92 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.53 | 11.50 | 11.48 | 11.46 | 11.45 |
| | | | | TIME | 5.42 | 5.33 | 5.33 | 5.33 | 5.33 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.09 | 1 | FLOW | 1125. | 1110. | 1094. | 1078. | 1071. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.09 | 1 | FLOW | 638. | 628. | 618. | 609. | 604. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.09 | 1 | FLOW | 487. | 482. | 476. | 470. | 467. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 638. | 628. | 618. | 609. | 604. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 332. | 328. | 323. | 318. | 316. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 305. | 300. | 295. | 290. | 288. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |

```
 2 COMBINED AT
+                C25      2.09    1   FLOW        793.     782.     771.     760.     755.
                                     TIME        4.00     4.00     4.00     4.00     4.00

ROUTED TO
+                R25      2.09    1   FLOW        783.     772.     761.     751.     745.
                                     TIME        4.08     4.08     4.08     4.08     4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.67    11.66    11.64    11.63    11.62
                                     TIME        4.08     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+                S8       .03     1   FLOW         53.      53.      52.      51.      51.
                                     TIME        3.17     3.17     3.17     3.17     3.17

HYDROGRAPH AT
+                S10      .37     1   FLOW        437.     431.     424.     418.     415.
                                     TIME        3.33     3.33     3.33     3.33     3.33

HYDROGRAPH AT
+                S12      .03     1   FLOW         57.      57.      56.      55.      55.
                                     TIME        3.17     3.17     3.17     3.17     3.17

HYDROGRAPH AT
+               SGC1      .01     1   FLOW         11.      11.      10.      10.      10.
                                     TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+              RBGC1      .01     1   FLOW          1.       1.       1.       1.       1.
                                     TIME        4.42     4.42     4.42     4.42     4.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      10.95    10.93    10.91    10.90    10.89
                                     TIME        4.50     4.50     4.50     4.50     4.50

 5 COMBINED AT
+                C13      2.54    1   FLOW        857.     845.     833.     821.     815.
                                     TIME        4.00     4.00     4.00     4.00     4.00

DIVERSION TO
+              DIV3L      2.54    1   FLOW         62.      61.      59.      58.      57.
                                     TIME        4.00     4.00     4.00     4.00     4.00

HYDROGRAPH AT
+              DIV3R      2.54    1   FLOW        794.     784.     774.     763.     758.
                                     TIME        4.00     4.00     4.00     4.00     4.00

HYDROGRAPH AT
+              RET3L       .00    1   FLOW         62.      61.      59.      58.      57.
                                     TIME        4.00     4.00     4.00     4.00     4.00

HYDROGRAPH AT
+                SQ       .01     1   FLOW         17.      16.      16.      16.      16.
                                     TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+               RBQ       .01     1   FLOW          1.       1.       1.       1.       1.
                                     TIME        4.58     4.58     4.58     4.58     4.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.62    11.58    11.54    11.51    11.49
                                     TIME        4.75     4.75     4.75     4.75     4.75

 2 COMBINED AT
```

```
+                C1B      .01    1   FLOW        64.     62.     60.     59.     58.
                                     TIME       4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+               RET2L     .00    1   FLOW       332.    328.    323.    318.    316.
                                     TIME       4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+                ST2      .03    1   FLOW        25.     24.     24.     24.     23.
                                     TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+               RBT2      .03    1   FLOW         1.      1.      1.      1.      1.
                                     TIME       5.67    5.33    5.42    5.50    5.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.07   12.02   11.97   11.93   11.91
                                     TIME       5.67    5.67    5.58    5.58    5.58

 HYDROGRAPH AT
+                SS1      .02    1   FLOW        16.     16.     16.     16.     15.
                                     TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+               RBS1      .02    1   FLOW         1.      1.      1.      1.      1.
                                     TIME       4.67    4.67    4.67    4.75    4.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.82   11.77   11.72   11.68   11.66
                                     TIME       4.83    4.83    4.75    4.75    4.75

  3 COMBINED AT
+                C2L      .05    1   FLOW       335.    330.    325.    321.    318.
                                     TIME       4.00    4.00    4.00    4.00    4.00

 ROUTED TO
+                R2L      .05    1   FLOW       332.    328.    323.    318.    316.
                                     TIME       4.08    4.08    4.08    4.08    4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.94   11.92   11.90   11.89   11.88
                                     TIME       4.08    4.08    4.08    4.08    4.08

 HYDROGRAPH AT
+                SR1      .02    1   FLOW        18.     18.     17.     17.     17.
                                     TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+               RBR1      .02    1   FLOW         1.      1.      1.      1.      1.
                                     TIME       4.92    4.92    4.92    4.92    4.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.76   11.71   11.67   11.62   11.60
                                     TIME       5.00    5.00    5.00    5.00    5.00

 HYDROGRAPH AT
+                SP1      .02    1   FLOW        15.     15.     15.     15.     15.
                                     TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+               RBP1      .02    1   FLOW         1.      1.      1.      1.      1.
                                     TIME       4.67    4.75    4.75    4.75    4.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     11.64   11.60   11.56   11.51   11.49
                                     TIME       4.75    4.75    4.75    4.75    4.75
```

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 HYDROGRAPH AT
+                 SM1       .02    1   FLOW          17.      17.      16.      16.      16.
                                      TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                 RBM1      .02    1   FLOW           1.       1.       1.       1.       1.
                                      TIME        4.67     4.67     4.67     4.75     4.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.77    11.73    11.69    11.65    11.63
                                      TIME        4.83     4.83     4.83     4.83     4.83

  4 COMBINED AT
+                 C26       .11    1   FLOW         336.     331.     326.     322.     319.
                                      TIME        4.08     4.08     4.08     4.08     4.08

  2 COMBINED AT
+                 NULL      .12    1   FLOW         398.     392.     386.     379.     376.
                                      TIME        4.08     4.08     4.08     4.08     4.08

 HYDROGRAPH AT
+                 S30       .42    1   FLOW         409.     404.     398.     393.     390.
                                      TIME        3.50     3.50     3.50     3.50     3.50

 ROUTED TO
+                 R30       .42    1   FLOW         405.     399.     394.     389.     386.
                                      TIME        3.58     3.58     3.58     3.58     3.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.14    12.12    12.11    12.09    12.08
                                      TIME        3.58     3.58     3.58     3.58     3.58

 HYDROGRAPH AT
+                 SA1       .03    1   FLOW          26.      26.      25.      25.      25.
                                      TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                 RBA1      .03    1   FLOW           1.       1.       1.       1.       1.
                                      TIME        5.50     5.50     5.50     5.33     5.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.98    11.93    11.89    11.85    11.83
                                      TIME        5.67     5.67     5.58     5.58     5.58

  2 COMBINED AT
+                 C32       .45    1   FLOW         406.     400.     395.     390.     387.
                                      TIME        3.58     3.58     3.58     3.58     3.58

 HYDROGRAPH AT
+                 S40      1.60    1   FLOW         640.     629.     619.     608.     603.
                                      TIME        4.08     4.08     4.08     4.08     4.08

 ROUTED TO
+                 R48      1.60    1   FLOW         585.     575.     564.     552.     546.
                                      TIME        4.50     4.50     4.50     4.50     4.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.95    12.94    12.92    12.90    12.89
                                      TIME        4.50     4.50     4.50     4.50     4.50

 HYDROGRAPH AT
+                 S50       .53    1   FLOW         426.     420.     414.     408.     405.
                                      TIME        3.58     3.58     3.58     3.58     3.58

  2 COMBINED AT
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+                    C51      2.13    1   FLOW        723.     715.     707.     700.     695.
                                         TIME        3.75     3.75     3.75     3.75     3.75

 HYDROGRAPH AT
+                    SJ1       .03    1   FLOW         30.      29.      29.      28.      28.
                                         TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                   RBJ1       .03    1   FLOW          1.       1.       1.       1.       1.
                                         TIME        5.67     5.67     5.67     5.92     5.92

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      11.83    11.78    11.74    11.70    11.68
                                         TIME        6.00     6.00     6.00     6.00     6.00

  2 COMBINED AT
+                    C52      2.16    1   FLOW        724.     716.     708.     701.     697.
                                         TIME        3.75     3.75     3.75     3.75     3.75

 ROUTED TO
+                    R51      2.16    1   FLOW        707.     697.     688.     679.     675.
                                         TIME        4.00     4.00     4.00     4.00     4.00

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.93    12.92    12.90    12.89    12.88
                                         TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                   SGC6       .02    1   FLOW         16.      15.      15.      15.      15.
                                         TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBGC6       .02    1   FLOW          1.       1.       1.       1.       1.
                                         TIME        4.67     4.67     4.67     4.67     4.67

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      11.31    11.27    11.23    11.18    11.16
                                         TIME        4.75     4.75     4.75     4.75     4.75

 HYDROGRAPH AT
+                    ST1       .03    1   FLOW         25.      24.      24.      24.      23.
                                         TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                   RBT1       .03    1   FLOW          1.       1.       1.       1.       1.
                                         TIME        5.67     5.33     5.42     5.50     5.50

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.07    12.02    11.97    11.93    11.91
                                         TIME        5.67     5.67     5.58     5.58     5.58

  4 COMBINED AT
+                    C54      2.65    1   FLOW        981.     968.     955.     942.     936.
                                         TIME        3.83     3.83     3.83     3.83     3.83

 ROUTED TO
+                    R54      2.65    1   FLOW        976.     963.     950.     937.     931.
                                         TIME        3.92     3.92     3.92     3.92     3.92

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      11.94    11.93    11.91    11.90    11.89
                                         TIME        3.92     3.92     3.92     3.92     3.92

 HYDROGRAPH AT
+                    SU1       .05    1   FLOW         40.      39.      39.      38.      38.
                                         TIME        3.42     3.42     3.42     3.42     3.42
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ROUTED TO
+                RBU1      .05    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        6.17    6.08    6.08    6.08    6.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.28   12.25   12.21   12.18   12.16
                                      TIME        6.25    6.25    6.25    6.25    6.25

HYDROGRAPH AT
+                 SL1      .03    1   FLOW         25.     25.     25.     24.     24.
                                      TIME        3.42    3.42    3.42    3.42    3.42

ROUTED TO
+                RBL1      .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.58    5.58    5.58    5.42    5.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.04   12.00   11.96   11.92   11.90
                                      TIME        5.75    5.67    5.67    5.67    5.67

HYDROGRAPH AT
+                 SN2      .01    1   FLOW          8.      8.      8.      8.      8.
                                      TIME        3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBN2      .01    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        4.17    4.17    4.17    4.17    4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.97   10.96   10.94   10.93   10.92
                                      TIME        4.17    4.17    4.17    4.17    4.17

 4 COMBINED AT
+                 C56     2.73    1   FLOW        980.    966.    953.    940.    934.
                                      TIME        3.92    3.92    3.92    3.92    3.92

HYDROGRAPH AT
+                SGC3      .02    1   FLOW         13.     13.     13.     12.     12.
                                      TIME        3.50    3.50    3.50    3.50    3.50

ROUTED TO
+               RBGC3      .02    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.50    5.50    5.50    5.50    5.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.91   10.90   10.88   10.86   10.86
                                      TIME        5.67    5.67    5.67    5.67    5.67

 3 COMBINED AT
+                NULL     2.87    1   FLOW       1366.   1346.   1327.   1308.   1298.
                                      TIME        3.92    3.92    3.92    3.92    3.92

HYDROGRAPH AT
+                 S60     1.81    1   FLOW        875.    862.    849.    836.    829.
                                      TIME        4.08    4.08    4.08    4.08    4.08

DIVERSION TO
+               DIV4L     1.81    1   FLOW        499.    492.    485.    478.    475.
                                      TIME        4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+               DIV4R     1.81    1   FLOW        377.    370.    364.    358.    355.
                                      TIME        4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
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```
+                    S70       .03    1   FLOW        53.      53.      52.      51.      51.
                                          TIME      3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                    SI3       .01    1   FLOW        15.      15.      15.      14.      14.
                                          TIME      3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                   RBI3       .01    1   FLOW         1.       1.       1.       1.       1.
                                          TIME      4.42     4.42     4.42     4.42     4.42

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     11.59    11.55    11.52    11.48    11.46
                                          TIME      4.58     4.58     4.58     4.50     4.50

  3 COMBINED AT
+                    C70      1.85    1   FLOW       381.     375.     368.     362.     359.
                                          TIME      4.08     4.08     4.08     4.08     4.08

 ROUTED TO
+                    R70      1.85    1   FLOW       379.     373.     366.     360.     356.
                                          TIME      4.08     4.08     4.08     4.08     4.17

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.10    12.08    12.05    12.03    12.02
                                          TIME      4.08     4.08     4.08     4.08     4.17

 HYDROGRAPH AT
+                    SB1       .03    1   FLOW        32.      31.      31.      30.      30.
                                          TIME      3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                   RBB1       .03    1   FLOW         1.       1.       1.       1.       1.
                                          TIME      5.83     5.83     6.00     6.00     6.00

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     11.87    11.83    11.78    11.74    11.72
                                          TIME      6.08     6.08     6.08     6.08     6.08

 HYDROGRAPH AT
+                   SGC4       .03    1   FLOW        30.      29.      29.      28.      28.
                                          TIME      3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBGC4       .03    1   FLOW         1.       1.       1.       1.       1.
                                          TIME      6.08     6.08     6.08     5.83     5.83

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     11.64    11.59    11.54    11.50    11.47
                                          TIME      6.08     6.08     6.08     6.08     6.08

  3 COMBINED AT
+                    C71      1.91    1   FLOW       381.     375.     369.     362.     359.
                                          TIME      4.08     4.08     4.08     4.08     4.17

 ROUTED TO
+                    R71      1.91    1   FLOW       379.     372.     366.     360.     356.
                                          TIME      4.17     4.17     4.25     4.25     4.25

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.09    12.07    12.05    12.03    12.02
                                          TIME      4.17     4.17     4.25     4.25     4.25

 HYDROGRAPH AT
+                    SN1       .06    1   FLOW        71.      70.      69.      68.      67.
                                          TIME      3.33     3.33     3.33     3.33     3.33
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ROUTED TO
+                RBN1      .06    1   FLOW          2.       2.       2.       2.       2.
                                      TIME        5.92     6.00     6.08     6.08     6.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.04    12.00    11.95    11.91    11.89
                                      TIME        6.25     6.25     6.25     6.25     6.25

 2 COMBINED AT
+                C62      1.97    1   FLOW        381.     374.     368.     361.     358.
                                      TIME        4.17     4.17     4.25     4.25     4.25

 2 COMBINED AT
+                NULL     4.85    1   FLOW       1710.    1684.    1659.    1634.    1621.
                                      TIME        4.00     4.00     4.00     4.00     4.00

HYDROGRAPH AT
+               RET4L      .00    1   FLOW        499.     492.     485.     478.     475.
                                      TIME        4.08     4.08     4.08     4.08     4.08

DIVERSION TO
+               DIV5L      .00    1   FLOW        256.     253.     250.     247.     246.
                                      TIME        4.08     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+               DIV5R      .00    1   FLOW        242.     238.     234.     230.     229.
                                      TIME        4.08     4.08     4.08     4.08     4.08

ROUTED TO
+                 R5R      .00    1   FLOW        242.     238.     234.     230.     228.
                                      TIME        4.08     4.08     4.08     4.08     4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.13    12.11    12.09    12.07    12.06
                                      TIME        4.08     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+                 SC1      .03    1   FLOW         21.      21.      21.      20.      20.
                                      TIME        3.42     3.42     3.42     3.42     3.42

ROUTED TO
+                RBC1      .03    1   FLOW          1.       1.       1.       1.       1.
                                      TIME        5.75     5.75     5.75     5.75     5.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       10.97    10.96    10.94    10.93    10.92
                                      TIME        6.00     6.00     6.00     6.00     6.00

HYDROGRAPH AT
+                 SD1      .02    1   FLOW         22.      22.      21.      21.      21.
                                      TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                RBD1      .02    1   FLOW          1.       1.       1.       1.       1.
                                      TIME        5.00     5.00     5.00     5.00     5.00

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.85    11.81    11.76    11.71    11.69
                                      TIME        5.25     5.25     5.17     5.17     5.17

 3 COMBINED AT
+                C66      .05    1   FLOW        244.     240.     236.     232.     230.
                                      TIME        4.08     4.08     4.08     4.08     4.08

 2 COMBINED AT
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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | NULL | 4.90 | 1 | FLOW | 1951. | 1921. | 1891. | 1862. | 1848. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 256. | 253. | 250. | 247. | 246. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI2 | .01 | 1 | FLOW | 13. | 13. | 13. | 12. | 12. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.67 | 4.67 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.11 | 11.08 | 11.05 | 11.02 | 11.01 |
| | | | | TIME | 4.67 | 4.67 | 4.67 | 4.67 | 4.67 |
| 2 COMBINED AT | | | | | | | | | |
| + | C5L | .01 | 1 | FLOW | 257. | 254. | 251. | 248. | 247. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .01 | 1 | FLOW | 257. | 254. | 251. | 248. | 246. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.20 | 12.19 | 12.17 | 12.16 | 12.15 |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SE2 | .01 | 1 | FLOW | 9. | 9. | 9. | 9. | 9. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBE2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.08 | 11.04 | 11.01 | 10.99 | 10.98 |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .02 | 1 | FLOW | 258. | 255. | 252. | 249. | 247. |
| | | | | TIME | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 4.92 | 1 | FLOW | 2206. | 2173. | 2140. | 2108. | 2093. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 66. | 65. | 64. | 63. | 62. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S90 | .06 | 1 | FLOW | 78. | 77. | 75. | 74. | 73. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI1 | .01 | 1 | FLOW | 17. | 16. | 16. | 16. | 16. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI1 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |

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                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.62    11.58    11.54    11.51    11.49
                                       TIME        4.75     4.75     4.75     4.75     4.75

 3 COMBINED AT
+                  C90      .14    1   FLOW       145.     142.     140.     137.     136.
                                       TIME        3.25     3.25     3.25     3.25     3.25

 ROUTED TO
+                  R90      .14    1   FLOW       128.     126.     123.     121.     120.
                                       TIME        3.33     3.33     3.33     3.33     3.33

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.46    11.45    11.43    11.41    11.40
                                       TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                  S94      .13    1   FLOW       153.     150.     147.     145.     144.
                                       TIME        3.25     3.25     3.25     3.25     3.25

 HYDROGRAPH AT
+                  S100     .15    1   FLOW       166.     163.     160.     157.     156.
                                       TIME        3.25     3.25     3.25     3.25     3.25

 HYDROGRAPH AT
+                  SH1      .03    1   FLOW        31.      31.      30.      30.      30.
                                       TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBH1     .03    1   FLOW         1.       1.       1.       1.       1.
                                       TIME        6.00     6.00     6.00     6.00     6.00

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.84    11.80    11.76    11.72    11.70
                                       TIME        6.08     6.08     6.08     6.08     6.08

 3 COMBINED AT
+                  C100     .31    1   FLOW       319.     313.     308.     302.     300.
                                       TIME        3.25     3.25     3.25     3.25     3.25

 ROUTED TO
+                  R100     .31    1   FLOW       297.     294.     291.     288.     287.
                                       TIME        3.33     3.33     3.33     3.33     3.33

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      12.39    12.38    12.36    12.35    12.35
                                       TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                  SE1      .04    1   FLOW        43.      43.      42.      41.      41.
                                       TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBE1     .04    1   FLOW         2.       2.       2.       2.       2.
                                       TIME        6.08     6.08     6.08     5.92     5.92

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      11.95    11.91    11.87    11.84    11.82
                                       TIME        6.08     6.08     6.08     6.08     6.08

 HYDROGRAPH AT
+                  SGC5     .03    1   FLOW        22.      21.      21.      21.      20.
                                       TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
```

```
+                RBGC5      .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.92    5.92    5.92    6.08    6.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.41   11.36   11.32   11.27   11.24
                                      TIME        6.17    6.17    6.17    6.08    6.08

 4 COMBINED AT
+                C103       .51    1   FLOW        426.    421.    415.    410.    407.
                                      TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                SGC2       .02    1   FLOW         18.     17.     17.     17.     17.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBGC2      .02    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.67    5.67    5.75    5.42    5.42

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.36   11.31   11.26   11.22   11.19
                                      TIME        5.75    5.75    5.75    5.75    5.75

 HYDROGRAPH AT
+                SO1        .01    1   FLOW         13.     13.     13.     13.     13.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBO1       .01    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        4.50    4.50    4.50    4.50    4.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.50   11.46   11.42   11.39   11.37
                                      TIME        4.67    4.67    4.67    4.58    4.58

 2 COMBINED AT
+                CO         .04    1   FLOW          2.      2.      2.      2.      2.
                                      TIME        4.92    4.92    4.92    4.92    4.92

 HYDROGRAPH AT
+                SM2        .03    1   FLOW         25.     25.     24.     24.     24.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBM2       .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.67    5.67    5.50    5.50    5.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.97   11.92   11.87   11.83   11.80
                                      TIME        5.75    5.75    5.75    5.75    5.75

 2 COMBINED AT
+                C28        .07    1   FLOW          3.      3.      3.      3.      3.
                                      TIME        5.25    5.25    5.08    5.08    5.08

 2 COMBINED AT
+                NULL       .58    1   FLOW        428.    422.    417.    411.    409.
                                      TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                SK1        .03    1   FLOW         28.     28.     27.     27.     27.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBK1       .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.58    5.58    5.67    5.50    5.50
```

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       11.86    11.82    11.78    11.74    11.72
                                      TIME         5.92     5.92     5.83     5.83     5.83

 HYDROGRAPH AT
+                   SF1       .02  1   FLOW          20.      20.      20.      19.      19.
                                      TIME         3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBF1       .02  1   FLOW           1.       1.       1.       1.       1.
                                      TIME         4.92     4.92     4.92     4.92     4.92

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       11.58    11.54    11.51    11.47    11.45
                                      TIME         5.08     5.08     5.08     5.08     5.08

  2 COMBINED AT
+                  NULL       .04  1   FLOW           2.       2.       2.       2.       2.
                                      TIME         5.33     5.33     5.33     5.25     5.25

 HYDROGRAPH AT
+                   SG1       .03  1   FLOW          33.      33.      32.      32.      32.
                                      TIME         3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBG1       .03  1   FLOW           1.       1.       1.       1.       1.
                                      TIME         6.17     5.92     5.92     6.08     6.08

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       11.86    11.82    11.78    11.73    11.71
                                      TIME         6.17     6.17     6.17     6.17     6.17

 HYDROGRAPH AT
+                   SG2       .03  1   FLOW          33.      33.      32.      32.      32.
                                      TIME         3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBG2       .03  1   FLOW           1.       1.       1.       1.       1.
                                      TIME         6.17     5.92     5.92     6.08     6.08

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       11.86    11.82    11.78    11.73    11.71
                                      TIME         6.17     6.17     6.17     6.17     6.17

  2 COMBINED AT
+                  NULL       .06  1   FLOW           2.       2.       2.       2.       2.
                                      TIME         6.17     6.08     6.08     6.08     6.08


*** NORMAL END OF HEC-1 ***
```

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  04/01/1993  TIME  07:32:11 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X       X     X        XX
X     X  X       X              X
XXXXXXX  XXXX    X       XXXXX  X
X     X  X       X              X
X     X  X       X     X        X
X     X  XXXXXXX   XXXXX        XXX
```

25 Year Event - Post Development Conditions

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

482           KK     SD1
483           KM    SUB-BASIN SS1: ON-SITE
484           BA    .024
485           LS              77     35.
486           UD    .278

487           KK    RBD1
488           KM     RETENTION BASIN
489           RS       1    ELEV      10
490           SV       0      .9     1.7     10.
491           SE      10     11.     13.     15.
492           SQ       0     1.0     1.5    200.

493           KK     C66
494           KM    COMBINE RBC1,RBD1, R5R: WASH 4A
495           HC       3

496           KK    NULL
497           HC       2

498           KK   RET5L
499           KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
500           DR   DIV5L

501           KK     SI2
502           KM    SUB-BASIN SI2: ON-SITE
503           BA    .015
504           LS              77     35.
505           UD    .303

506           KK    RBI2
507           KM     RETENTION BASIN
508           RS       1    ELEV      10
509           SV       0      .7     1.4     10.
510           SE      10     11.     13.     15.
511           SQ       0     1.0     1.5    200.

512           KK     C5L
513           HC       2

514           KK     R5L
515           KM    ROUTE DIV5L THRU S68: WASH 4
516           KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
517           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
518           KM      OVERBANKS = 40':(TYPICAL)
519           RS       1    ELEV      10
520           RC    .055    .035    .055    1750    .018
521           RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
522           RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 523          KK     SE2
 524          KM    SUB-BASIN SE2: ON-SITE
 525          BA    .009
 526          LS              85     35.
 527          UD    .336

 528          KK    RBE2
 529          KM     RETENTION BASIN
 530          RS       1    ELEV      10
 531          SV       0      .5      .9     10.
 532          SE      10     11.     13.     15.
 533          SQ       0     1.0     1.5    200.

 534          KK     C68
 535          KM    COMBINE RBE2 & R5L: WASH 4
 536          HC       2

 537          KK    NULL
 538          HC       2

 539          KK     S80
 540          KM    SUB-BASIN S80: OFF-SITE
 541          BA    .058
 542          LS              85
 543          UD    .166

 544          KK     S90
 545          KM    SUB-BASIN S90: OFF-SITE
 546          BA    .063
 547          LS              86
 548          UD    .152

 549          KK     SI1
 550          KM    SUB-BASIN SI1: ON-SITE
 551          BA    .015
 552          LS              85     35.
 553          UD    .301

 554          KK    RBI1
 555          KM     RETENTION BASIN
 556          RS       1    ELEV      10
 557          SV       0      .7     1.4     10.
 558          SE      10     11.     13.     15.
 559          SQ       0     1.0     1.5    200.

 560          KK     C90
 561          HC       3

 562          KK     R90
 563          KM    ROUTE C90
 564          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 565          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 566          KM      OVERBANKS = 40':(TYPICAL)
 567          RS       2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 568          RC    .055    .035    .055    3500    .018
 569          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 570          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 571          KK     S94
 572          KM    SUB-BASIN S94: OFF-SITE
 573          BA    .132
 574          LS              86
 575          UD    .186

 576          KK    S100
 577          KM    SUB-BASIN S100: OFF-SITE
 578          BA    .148
 579          LS              86
 580          UD    .196

 581          KK     SH1
 582          KM    SUB-BASIN SH: ON-SITE
 583          BA    .029
 584          LS              85      35.
 585          UD    .313

 586          KK    RBH1
 587          KM     RETENTION BASIN
 588          RS       1    ELEV      10
 589          SV       0     1.4     2.7     10.
 590          SE      10     11.     13.     15.
 591          SQ       0     1.0     1.5    200.

 592          KK    C100
 593          HC       3

 594          KK    R100
 595          KM    ROUTE C100 :WASH 6
 596          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 597          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 598          KM      OVERBANKS = 40':(TYPICAL)
 599          RS       2    ELEV      10
 600          RC    .055    .035    .055    2400    .018
 601          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 602          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 603          KK     SE1
 604          KM    SUB-BASIN SE1: ON-SITE
 605          BA    .038
 606          LS              85      35.
 607          UD    .293

 608          KK    RBE1
 609          KM     RETENTION BASIN
 610          RS       1    ELEV      10
 611          SV       0     1.7     3.5     10.
 612          SE      10     11.     13.     15.
 613          SQ       0     1.2     2.0    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 614          KK    SGC5
 615          KM    SUB-BASIN GC5: ON-SITE
 616          BA    .029
 617          LS              85
 618          UD    .351

 619          KK   RBGC5
 620          KM     RETENTION BASIN
 621          RS       1    ELEV      10
 622          SV       0     1.1     2.1     10.
 623          SE      10     11.     13.     15.
 624          SQ       0     1.0     1.5    200.

 625          KK    C103
 626          KM        COMBINE RBGC5,RBE1,R90,R100:WASH 6
 627          HC       4

 628          KK    SGC2
 629          KM    SUB-BASIN GC2: ON-SITE
 630          BA    .024
 631          LS              85
 632          UD    .359

 633          KK   RBGC2
 634          KM     RETENTION BASIN
 635          RS       1    ELEV      10
 636          SV       0      .9     1.7     10.
 637          SE      10     11.     13.     15.
 638          SQ       0     1.0     1.5    200.

 639          KK     SO1
 640          KM    SUB-BASIN SO: ON-SITE
 641          BA    .014
 642          LS              81     35.
 643          UD    .315

 644          KK    RBO1
 645          KM     RETENTION BASIN
 646          RS       1    ELEV      10
 647          SV       0      .6     1.2     10.
 648          SE      10     11.     13.     15.
 649          SQ       0     1.0     1.5    200.

 650          KK      CO
 651          HC       2

 652          KK     SM2
 653          KM    SUB-BASIN SM2: ON-SITE
 654          BA    .029
 655          LS              78     35.
 656          UD    .322
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 657          KK    RBM2
 658          KM     RETENTION BASIN
 659          RS       1    ELEV      10
 660          SV       0     1.1     2.1     10.
 661          SE      10     11.     13.     15.
 662          SQ       0     1.0     1.5    200.

 663          KK     C28
 664          HC       2

 665          KK    NULL
 666          HC       2

 667          KK     SK1
 668          KM    SUB-BASIN SK1: ON-SITE
 669          BA    .026
 670          LS              85     35.
 671          UD    .318

 672          KK    RBK1
 673          KM     RETENTION BASIN
 674          RS       1    ELEV      10
 675          SV       0     1.2     2.4     10.
 676          SE      10     11.     13.     15.
 677          SQ       0     1.0     1.5    200.

 678          KK     SF1
 679          KM    SUB-BASIN SF1: ON-SITE
 680          BA    .018
 681          LS              85     35.
 682          UD    .297

 683          KK    RBF1
 684          KM     RETENTION BASIN
 685          RS       1    ELEV      10
 686          SV       0      .9     1.7     10.
 687          SE      10     11.     13.     15.
 688          SQ       0     1.0     1.5    200.

 689          KK    NULL
 690          HC       2

 691          KK     SG1
 692          KM    SUB-BASIN SG1: ON-SITE
 693          BA    .031
 694          LS              85     35.
 695          UD    .318

 696          KK    RBG1
 697          KM     RETENTION BASIN
 698          RS       1    ELEV      10
 699          SV       0     1.5     2.9     10.
 700          SE      10     11.     13.     15.
 701          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 702          KK     SG2
 703          KM    SUB-BASIN SG2: ON-SITE
 704          BA    .031
 705          LS              85     35.
 706          UD    .318

 707          KK    RBG2
 708          KM     RETENTION BASIN
 709          RS       1    ELEV      10
 710          SV       0     1.5     2.9     10.
 711          SE      10     11.     13.     15.
 712          SQ       0     1.0     1.5    200.

 713          KK    NULL
 714          HC       2
 715          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
              .
              .
  27          .          S16
              .            .
              .            .
  32          .            .         S20
              .            .          V
              .            .          V
  37          .            .         R20
              .            .          .
              .            .          .
  46          .            .          .        SCOM
              .            .          .          V
              .            .          .          V
  51          .            .          .       RBCOM
              .            .          .          .
              .            .          .          .
  57         C24.......................................
              .
              .
  62          .-------->   DIV1L
  60       DIV1R
              .
              .
  67          .            .<-------   DIV1L
  65          .        RET1L
              .            .
              .            .
  70          .            .------->   DIV2L
  68          .        DIV2R
              .            .
              .            .
  73         C25............
              V
              V
  76         R25
              .
              .
  85          .          S8
              .            .
              .            .
  90          .            .         S10
              .            .          .
              .            .          .
  95          .            .          .        S12
              .            .          .          .
              .            .          .          .
 100          .            .          .          .        SGC1
              .            .          .          .          V
              .            .          .          .          V
 105          .            .          .          .       RBGC1
              .            .          .          .          .
              .            .          .          .          .
 111         C13.............................................
              .
              .
 117          .-------->   DIV3L
 114       DIV3R
```

```
122          .<-------  DIV3L
120       RET3L
                 .
                 .
123              .        SQ
                 .         V
                 .         V
128              .       RBQ
                 .         .
                 .         .
134           C1B............
                 .
                 .
139              .<-------  DIV2L
137              .     RET2L
                 .         .
                 .         .
140              .        ST2
                 .         V
                 .         V
145              .       RBT2
                 .         .
                 .         .
151              .         .        SS1
                 .         .         V
                 .         .         V
156              .         .       RBS1
                 .         .         .
                 .         .         .
162              .       C2L.......................
                 .         V
                 .         V
165              .       R2L
                 .         .
                 .         .
174              .         .       SR1
                 .         .        V
                 .         .        V
179              .         .      RBR1
                 .         .         .
                 .         .         .
185              .         .         .        SP1
                 .         .         .         V
                 .         .         .         V
190              .         .         .       RBP1
                 .         .         .         .
                 .         .         .         .
196              .         .         .         .        SM1
                 .         .         .         .         V
                 .         .         .         .         V
201              .         .         .         .       RBM1
                 .         .         .         .         .
                 .         .         .         .         .
207              .       C26.....................................
                 .         .
                 .         .
210           NULL............
                 .
                 .
212              .       S30
                 .        V
                 .        V
217              .       R30
                 .        .
```

```
226                 SA1
                     V
                     V
231                 RBA1
                     .
                     .
237          C32............
                     .
                     .
240                 S40
                     V
                     V
245                 R48
                     .
                     .
253                              S50
                     .            .
                     .            .
258                 C51............
                     .
                     .
261                              SJ1
                     .            V
                     .            V
266                              RBJ1
                     .            .
                     .            .
272                 C52............
                     V
                     V
274                 R51
                     .
                     .
283                              SGC6
                     .            V
                     .            V
288                              RBGC6
                     .            .
                     .            .
294                              .            ST1
                     .            .            V
                     .            .            V
299                              .            RBT1
                     .            .            .
                     .            .            .
305          C54.................................
              V
              V
308          R54
                     .
                     .
317                 SU1
                     V
                     V
322                 RBU1
                     .
                     .
328                              SL1
                     .            V
                     .            V
333                              RBL1
                     .            .
                     .            .
339                              .            SN2
                     .            .            V
```

```
                                                          V
344                                                     RBN2
                                                          .
                                                          .
350                    C56.................................
                        .
                        .
353                     .        SGC3
                        .          V
                        .          V
358                     .       RBGC3
                        .          .
                        .          .
364                NULL.......................
                        .
                        .
366                    S60
                        .
                        .
373                     .-------> DIV4L
371                   DIV4R
                        .
                        .
376                     .         S70
                        .          .
                        .          .
381                     .          .        SI3
                        .          .         V
                        .          .         V
386                     .          .       RBI3
                        .          .         .
                        .          .         .
392                    C70.......................
                        V
                        V
395                    R70
                        .
                        .
404                     .         SB1
                        .          V
                        .          V
409                     .        RBB1
                        .          .
                        .          .
415                     .          .        SGC4
                        .          .         V
                        .          .         V
420                     .          .       RBGC4
                        .          .         .
                        .          .         .
426                    C71.......................
                        V
                        V
429                    R71
                        .
                        .
438                     .         SN1
                        .          V
                        .          V
443                     .        RBN1
                        .          .
                        .          .
449                    C62............
                        .
                        .
452                NULL............
```

```
456                  .<-------   DIV4L
454             RET4L
                     .
                     .
459                  .------->   DIV5L
457             DIV5R
                     V
                     V
462                 R5R
                     .
                     .
471                  .          SC1
                     .           V
                     .           V
476                  .         RBC1
                     .           .
                     .           .
482                  .           .          SD1
                     .           .           V
                     .           .           V
487                  .           .         RBD1
                     .           .           .
                     .           .           .
493             C66.......................
                     .
                     .
496        NULL............
                     .
                     .
500                  .<-------   DIV5L
498             RET5L
                     .
                     .
501                  .          SI2
                     .           V
                     .           V
506                  .         RBI2
                     .           .
                     .           .
512             C5L............
                     V
                     V
514                 R5L
                     .
                     .
523                  .          SE2
                     .           V
                     .           V
528                  .         RBE2
                     .           .
                     .           .
534             C68............
                     .
                     .
537        NULL............
                     .
                     .
539                 S80
                     .
                     .
544                  .          S90
                     .           .
                     .           .
549                  .           .          SI1
```

```
                                          V
                                          V
554                                      RBI1
                                          .
                                          .
560                   C90.................
                       V
                       V
562                   R90
                       .
                       .
571                          S94
                             .
                             .
576                                      S100
                                          .
                                          .
581                                          SH1
                                              V
                                              V
586                                          RBH1
                                              .
                                              .
592                          C100................
                                V
                                V
594                          R100
                             .
                             .
603                                      SE1
                                          V
                                          V
608                                      RBE1
                                          .
                                          .
614                                          SGC5
                                              V
                                              V
619                                          RBGC5
                                              .
                                              .
625                   C103...................
                       .
                       .
628                          SGC2
                                V
                                V
633                          RBGC2
                             .
                             .
639                                      SO1
                                          V
                                          V
644                                      RBO1
                                          .
                                          .
650                          CO.............
                             .
                             .
652                                      SM2
                                          V
                                          V
657                                      RBM2
                                          .
                                          .
663                          C28............
```

```
                .         .         .         .
                .         .         .         .
665             .         .      NULL............
                .         .         .
                .         .         .
667             .         .         .      SK1
                .         .         .       V
                .         .         .       V
672             .         .         .      RBK1
                .         .         .         .
                .         .         .         .
678             .         .         .         .      SF1
                .         .         .         .       V
                .         .         .         .       V
683             .         .         .         .      RBF1
                .         .         .         .         .
                .         .         .         .         .
689             .         .         .      NULL............
                .         .         .         .
                .         .         .         .
691             .         .         .         .      SG1
                .         .         .         .       V
                .         .         .         .       V
696             .         .         .         .      RBG1
                .         .         .         .         .
                .         .         .         .         .
702             .         .         .         .         .      SG2
                .         .         .         .         .       V
                .         .         .         .         .       V
707             .         .         .         .         .      RBG2
                .         .         .         .         .         .
                .         .         .         .         .         .
713             .         .         .         .      NULL............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  04/01/1993  TIME  07:32:11 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    DWP25P
                    DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-ZN-92
                    25 YR - 6HR RAINFALL EVENT
                    HEC-1 HYPOTHETICAL DISTRIBUTION
                    LAG TIMES: travel time calculations
                    CURVE NUMBERS: RANGE 76 TO 88
                            VEGETATION: POOR CONDITION DESERT SHRUB
                            SOIL TYPES:  A, B, C & D
                    DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                    AREA(SQMI)      %
                    --------------------
                     0            1.0
                     1            0.99
                     2            0.98
                     3            0.97
                     4            0.965
                    --------------------

 19 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1    0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     2    0  ENDING DATE
                   NDTIME       0055  ENDING TIME
                    ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

   JP         MULTI-PLAN OPTION
                    NPLAN          1  NUMBER OF PLANS

   JR         MULTI-RATIO OPTION
                 RATIOS OF PRECIPITATION
                1.00      .99      .98      .97      .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| OPERATION | STATION | AREA | PLAN | | RATIOS APPLIED TO PRECIPITATION RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 220. | 217. | 214. | 212. | 210. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 87. | 86. | 84. | 83. | 83. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 1355. | 1337. | 1319. | 1301. | 1291. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 1350. | 1333. | 1315. | 1297. | 1287. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.32 | 12.31 | 12.29 | 12.27 | 12.26 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SCOM | .02 | 1 | FLOW | 33. | 33. | 32. | 32. | 32. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBCOM | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 5.50 | 5.42 | 5.42 | 5.42 | 5.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.90 | 11.87 | 11.85 | 11.82 | 11.81 |
| | | | | TIME | 5.75 | 5.75 | 5.75 | 5.75 | 5.67 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.09 | 1 | FLOW | 1378. | 1361. | 1343. | 1324. | 1315. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.09 | 1 | FLOW | 804. | 793. | 781. | 769. | 762. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.09 | 1 | FLOW | 574. | 568. | 562. | 555. | 552. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 804. | 793. | 781. | 769. | 762. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 401. | 397. | 392. | 388. | 385. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 404. | 396. | 389. | 381. | 377. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |

```
 2 COMBINED AT
+                C25      2.09    1   FLOW        977.    964.    950.    937.    930.
                                     TIME        4.00    4.00    4.00    4.00    4.00

 ROUTED TO
+                R25      2.09    1   FLOW        967.    953.    939.    926.    919.
                                     TIME        4.08    4.08    4.08    4.08    4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.90   11.88   11.87   11.85   11.84
                                     TIME        4.08    4.08    4.08    4.08    4.08

 HYDROGRAPH AT
+                S8       .03     1   FLOW         66.     65.     64.     64.     63.
                                     TIME        3.17    3.17    3.17    3.17    3.17

 HYDROGRAPH AT
+                S10      .37     1   FLOW        542.    535.    527.    519.    515.
                                     TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                S12      .03     1   FLOW         71.     70.     69.     68.     67.
                                     TIME        3.17    3.17    3.17    3.17    3.17

 HYDROGRAPH AT
+               SGC1      .01     1   FLOW         14.     14.     13.     13.     13.
                                     TIME        3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+              RBGC1      .01     1   FLOW          1.      1.      1.      1.      1.
                                     TIME        4.50    4.50    4.58    4.58    4.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      11.50   11.45   11.41   11.37   11.34
                                     TIME        4.58    4.58    4.58    4.58    4.58

 5 COMBINED AT
+                C13      2.54    1   FLOW       1063.   1048.   1033.   1018.   1010.
                                     TIME        4.00    4.00    4.00    4.00    4.00

 DIVERSION TO
+              DIV3L      2.54    1   FLOW         86.     84.     83.     81.     80.
                                     TIME        4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+              DIV3R      2.54    1   FLOW        977.    964.    950.    937.    930.
                                     TIME        4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+              RET3L      .00     1   FLOW         86.     84.     83.     81.     80.
                                     TIME        4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+                SQ       .01     1   FLOW         21.     20.     20.     20.     20.
                                     TIME        3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+               RBQ       .01     1   FLOW          1.      1.      1.      1.      1.
                                     TIME        4.83    4.83    4.83    4.83    4.83

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      12.25   12.20   12.16   12.11   12.09
                                     TIME        4.92    4.92    4.92    4.92    4.83

 2 COMBINED AT
```

```
+                    C1B       .01    1   FLOW        87.     85.     84.     82.     81.
                                          TIME       4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+                  RET2L       .00    1   FLOW       401.    397.    392.    388.    385.
                                          TIME       4.00    4.00    4.00    4.00    4.00

 HYDROGRAPH AT
+                    ST2       .03    1   FLOW        31.     30.     30.     29.     29.
                                          TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                   RBT2       .03    1   FLOW         1.      1.      1.      1.      1.
                                          TIME       5.75    5.83    5.83    5.83    5.83

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.86   12.81   12.75   12.69   12.67
                                          TIME       5.92    5.92    5.92    5.92    5.92

 HYDROGRAPH AT
+                    SS1       .02    1   FLOW        20.     20.     20.     19.     19.
                                          TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                   RBS1       .02    1   FLOW         1.      1.      1.      1.      1.
                                          TIME       4.92    4.92    4.92    4.92    4.92

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.62   12.56   12.50   12.45   12.42
                                          TIME       5.00    5.00    5.00    4.92    4.92

  3 COMBINED AT
+                    C2L       .05    1   FLOW       404.    399.    395.    390.    388.
                                          TIME       4.00    4.00    4.00    4.00    4.00

 ROUTED TO
+                    R2L       .05    1   FLOW       402.    397.    393.    388.    386.
                                          TIME       4.08    4.08    4.08    4.08    4.08

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.17   12.15   12.14   12.13   12.12
                                          TIME       4.08    4.08    4.08    4.08    4.08

 HYDROGRAPH AT
+                    SR1       .02    1   FLOW        22.     22.     22.     21.     21.
                                          TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                   RBR1       .02    1   FLOW         1.      1.      1.      1.      1.
                                          TIME       5.08    5.08    5.08    5.08    5.08

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.53   12.48   12.42   12.37   12.34
                                          TIME       5.25    5.25    5.25    5.25    5.17

 HYDROGRAPH AT
+                    SP1       .02    1   FLOW        19.     19.     19.     18.     18.
                                          TIME       3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                   RBP1       .02    1   FLOW         1.      1.      1.      1.      1.
                                          TIME       4.92    4.92    4.75    4.75    4.75

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE      12.40   12.35   12.29   12.24   12.21
                                          TIME       4.92    4.92    4.92    4.92    4.92
```

```
HYDROGRAPH AT
+                SM1      .02    1   FLOW        21.      21.      20.      20.      20.
                                     TIME       3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                RBM1     .02    1   FLOW         1.       1.       1.       1.       1.
                                     TIME       4.83     4.92     4.92     4.92     4.92

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.49    12.44    12.38    12.33    12.31
                                     TIME       5.08     5.08     5.00     5.00     5.00

 4 COMBINED AT
+                C26      .11    1   FLOW       406.     401.     397.     392.     390.
                                     TIME       4.08     4.08     4.08     4.08     4.08

 2 COMBINED AT
+                NULL     .12    1   FLOW       492.     486.     480.     473.     470.
                                     TIME       4.00     4.00     4.00     4.00     4.00

HYDROGRAPH AT
+                S30      .42    1   FLOW       495.     489.     483.     476.     473.
                                     TIME       3.50     3.50     3.50     3.50     3.50

ROUTED TO
+                R30      .42    1   FLOW       484.     478.     473.     467.     465.
                                     TIME       3.58     3.58     3.58     3.58     3.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.38    12.36    12.35    12.33    12.33
                                     TIME       3.58     3.58     3.58     3.58     3.58

HYDROGRAPH AT
+                SA1      .03    1   FLOW        32.      32.      31.      31.      31.
                                     TIME       3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                RBA1     .03    1   FLOW         1.       1.       1.       1.       1.
                                     TIME       5.83     5.67     5.67     5.67     5.67

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.69    12.64    12.59    12.54    12.52
                                     TIME       5.92     5.92     5.92     5.92     5.92

 2 COMBINED AT
+                C32      .45    1   FLOW       485.     479.     474.     469.     466.
                                     TIME       3.58     3.58     3.58     3.58     3.58

HYDROGRAPH AT
+                S40     1.60    1   FLOW       814.     801.     788.     776.     769.
                                     TIME       4.08     4.08     4.08     4.08     4.08

ROUTED TO
+                R48     1.60    1   FLOW       753.     740.     728.     717.     711.
                                     TIME       4.50     4.50     4.50     4.50     4.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     13.19    13.18    13.16    13.14    13.13
                                     TIME       4.50     4.50     4.50     4.50     4.50

HYDROGRAPH AT
+                S50      .53    1   FLOW       521.     514.     507.     500.     496.
                                     TIME       3.58     3.58     3.58     3.58     3.58

 2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | C51 | 2.13 | 1 | FLOW | 911. | 896. | 881. | 866. | 859. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SJ1 | .03 | 1 | FLOW | 37. | 36. | 36. | 35. | 35. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBJ1 | .03 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 5.92 | 5.92 | 5.92 | 5.92 | 5.92 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.55 | 12.50 | 12.45 | 12.40 | 12.38 |
| | | | | TIME | 6.08 | 6.08 | 6.08 | 6.08 | 6.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | C52 | 2.16. | 1 | FLOW | 913. | 897. | 882. | 867. | 860. |
| | | | | TIME | 4.33 | 4.33 | 4.33 | 4.33 | 4.33 |
| ROUTED TO | | | | | | | | | |
| + | R51 | 2.16 | 1 | FLOW | 908. | 892. | 876. | 861. | 854. |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 13.21 | 13.19 | 13.17 | 13.15 | 13.14 |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SGC6 | .02 | 1 | FLOW | 20. | 20. | 20. | 19. | 19. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBGC6 | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.83 | 4.83 | 4.83 | 4.83 | 4.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.07 | 12.02 | 11.96 | 11.91 | 11.88 |
| | | | | TIME | 5.00 | 5.00 | 4.92 | 4.92 | 4.92 |
| HYDROGRAPH AT | | | | | | | | | |
| + | ST1 | .03 | 1 | FLOW | 31. | 30. | 30. | 29. | 29. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBT1 | .03 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 5.75 | 5.83 | 5.83 | 5.83 | 5.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.86 | 12.81 | 12.75 | 12.69 | 12.67 |
| | | | | TIME | 5.92 | 5.92 | 5.92 | 5.92 | 5.92 |
| 4 COMBINED AT | | | | | | | | | |
| + | C54 | 2.65 | 1 | FLOW | 1221. | 1202. | 1183. | 1164. | 1156. |
| | | | | TIME | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| ROUTED TO | | | | | | | | | |
| + | R54 | 2.65 | 1 | FLOW | 1204. | 1187. | 1169. | 1152. | 1143. |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.21 | 12.19 | 12.17 | 12.15 | 12.14 |
| | | | | TIME | 3.83 | 3.83 | 3.83 | 3.83 | 3.83 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SU1 | .05 | 1 | FLOW | 50. | 49. | 49. | 48. | 47. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |

```
ROUTED TO
+                RBU1      .05    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        6.25    6.25    6.17    6.17    6.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.91   12.86   12.82   12.78   12.75
                                      TIME        6.33    6.33    6.33    6.33    6.33

HYDROGRAPH AT
+                 SL1      .03    1   FLOW         32.     31.     31.     30.     30.
                                      TIME        3.42    3.42    3.42    3.42    3.42

ROUTED TO
+                RBL1      .03    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.92    5.92    5.75    5.75    5.75

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.79   12.74   12.68   12.63   12.61
                                      TIME        6.00    6.00    6.00    6.00    6.00

HYDROGRAPH AT
+                 SN2      .01    1   FLOW         10.     10.     10.     10.     10.
                                      TIME        3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBN2      .01    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        4.17    4.17    4.17    4.17    4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.53   11.48   11.44   11.40   11.37
                                      TIME        4.25    4.25    4.25    4.25    4.25

 4 COMBINED AT
+                 C56     2.73    1   FLOW       1208.   1190.   1173.   1156.   1147.
                                      TIME        3.83    3.83    3.83    3.83    3.83

HYDROGRAPH AT
+                SGC3      .02    1   FLOW         17.     17.     17.     16.     16.
                                      TIME        3.50    3.50    3.50    3.50    3.50

ROUTED TO
+               RBGC3      .02    1   FLOW          1.      1.      1.      1.      1.
                                      TIME        5.50    5.50    5.50    5.50    5.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.45   11.40   11.36   11.31   11.29
                                      TIME        5.75    5.75    5.75    5.75    5.75

 3 COMBINED AT
+                NULL     2.87    1   FLOW       1680.   1659.   1637.   1615.   1603.
                                      TIME        3.92    3.92    3.92    3.92    3.92

HYDROGRAPH AT
+                 S60     1.81    1   FLOW       1093.   1077.   1061.   1045.   1038.
                                      TIME        4.08    4.08    4.08    4.08    4.08

DIVERSION TO
+               DIV4L     1.81    1   FLOW        600.    604.    596.    587.    583.
                                      TIME        4.17    4.08    4.08    4.08    4.08

HYDROGRAPH AT
+               DIV4R     1.81    1   FLOW        495.    473.    466.    458.    454.
                                      TIME        4.08    4.08    4.08    4.08    4.08

HYDROGRAPH AT
```

```
+                    S70       .03    1   FLOW        65.     64.     63.     63.     62.
                                          TIME      3.17    3.17    3.17    3.17    3.17

 HYDROGRAPH AT
+                    SI3       .01    1   FLOW        18.     18.     18.     18.     18.
                                          TIME      3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                    RBI3      .01    1   FLOW         1.      1.      1.      1.      1.
                                          TIME      4.67    4.50    4.50    4.50    4.50

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.21   12.17   12.12   12.08   12.06
                                          TIME      4.67    4.67    4.67    4.67    4.67

  3 COMBINED AT
+                    C70      1.85    1   FLOW       500.    478.    470.    463.    459.
                                          TIME      4.08    4.08    4.08    4.08    4.08

 ROUTED TO
+                    R70      1.85    1   FLOW       490.    474.    466.    459.    455.
                                          TIME      4.17    4.17    4.17    4.17    4.17

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.43   12.39   12.37   12.35   12.34
                                          TIME      4.17    4.17    4.17    4.17    4.17

 HYDROGRAPH AT
+                    SB1       .03    1   FLOW        39.     39.     38.     38.     37.
                                          TIME      3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                    RBB1      .03    1   FLOW         1.      1.      1.      1.      1.
                                          TIME      6.00    6.08    6.08    6.08    6.08

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.61   12.56   12.51   12.45   12.43
                                          TIME      6.17    6.17    6.17    6.17    6.17

 HYDROGRAPH AT
+                    SGC4      .03    1   FLOW        38.     38.     37.     37.     36.
                                          TIME      3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                    RBGC4     .03    1   FLOW         1.      1.      1.      1.      1.
                                          TIME      6.00    6.00    6.00    6.00    6.00

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.50   12.44   12.38   12.32   12.29
                                          TIME      6.17    6.17    6.17    6.17    6.17

  3 COMBINED AT
+                    C71      1.91    1   FLOW       493.    476.    469.    462.    458.
                                          TIME      4.17    4.17    4.17    4.17    4.17

 ROUTED TO
+                    R71      1.91    1   FLOW       482.    469.    463.    457.    454.
                                          TIME      4.33    4.33    4.25    4.25    4.25

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.41   12.37   12.36   12.34   12.33
                                          TIME      4.33    4.33    4.25    4.25    4.25

 HYDROGRAPH AT
+                    SN1       .06    1   FLOW        87.     86.     85.     83.     83.
                                          TIME      3.33    3.33    3.33    3.33    3.33
```

```
ROUTED TO
+                RBN1      .06    1   FLOW          2.       2.       2.       2.       2.
                                      TIME        6.17     6.08     6.08     6.08     6.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.79    12.73    12.68    12.63    12.60
                                      TIME        6.25     6.25     6.25     6.25     6.25

 2 COMBINED AT
+                C62      1.97    1   FLOW        484.     471.     465.     459.     456.
                                      TIME        4.33     4.33     4.25     4.25     4.25

 2 COMBINED AT
+                NULL     4.85    1   FLOW       2100.    2074.    2049.    2022.    2008.
                                      TIME        4.00     4.00     4.00     4.00     4.00

HYDROGRAPH AT
+               RET4L      .00    1   FLOW        600.     604.     596.     587.     583.
                                      TIME        4.17     4.08     4.08     4.08     4.08

DIVERSION TO
+               DIV5L      .00    1   FLOW        301.     302.     299.     295.     293.
                                      TIME        4.17     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+               DIV5R      .00    1   FLOW        299.     302.     297.     292.     290.
                                      TIME        4.17     4.08     4.08     4.08     4.08

ROUTED TO
+                 R5R      .00    1   FLOW        298.     299.     294.     290.     288.
                                      TIME        4.17     4.08     4.08     4.08     4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.39    12.40    12.38    12.36    12.35
                                      TIME        4.17     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+                 SC1      .03    1   FLOW         27.      26.      26.      26.      25.
                                      TIME        3.42     3.42     3.42     3.42     3.42

ROUTED TO
+                RBC1      .03    1   FLOW          1.       1.       1.       1.       1.
                                      TIME        6.08     6.00     6.00     6.00     6.00

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       11.47    11.43    11.39    11.36    11.34
                                      TIME        6.17     6.17     6.08     6.08     6.08

HYDROGRAPH AT
+                 SD1      .02    1   FLOW         28.      27.      27.      26.      26.
                                      TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                RBD1      .02    1   FLOW          1.       1.       1.       1.       1.
                                      TIME        5.25     5.25     5.25     5.25     5.25

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.65    12.59    12.53    12.48    12.45
                                      TIME        5.42     5.42     5.42     5.42     5.42

 3 COMBINED AT
+                C66      .05    1   FLOW        301.     301.     297.     292.     290.
                                      TIME        4.17     4.08     4.08     4.08     4.08

 2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | NULL | 4.90 | 1 | FLOW | 2397. | 2370. | 2340. | 2309. | 2294. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 301. | 302. | 299. | 295. | 293. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI2 | .01 | 1 | FLOW | 16. | 16. | 16. | 16. | 15. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.67 | 4.67 | 4.67 | 4.67 | 4.75 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.65 | 11.61 | 11.58 | 11.54 | 11.52 |
| | | | | TIME | 4.83 | 4.83 | 4.83 | 4.83 | 4.83 |
| 2 COMBINED AT | | | | | | | | | |
| + | C5L | .01 | 1 | FLOW | 302. | 303. | 300. | 296. | 294. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .01 | 1 | FLOW | 301. | 301. | 297. | 294. | 292. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.40 | 12.40 | 12.39 | 12.38 | 12.37 |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SE2 | .01 | 1 | FLOW | 12. | 11. | 11. | 11. | 11. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBE2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.42 | 4.42 | 4.42 | 4.42 | 4.42 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 11.69 | 11.65 | 11.60 | 11.56 | 11.54 |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .02 | 1 | FLOW | 302. | 302. | 298. | 295. | 293. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 4.92 | 1 | FLOW | 2695. | 2666. | 2633. | 2599. | 2583. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 86. | 84. | 83. | 82. | 81. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S90 | .06 | 1 | FLOW | 100. | 98. | 96. | 95. | 94. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI1 | .01 | 1 | FLOW | 21. | 20. | 20. | 20. | 20. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI1 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.83 | 4.83 | 4.83 | 4.83 | 4.83 |

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.25    12.20    12.16    12.11    12.09
                                      TIME        4.92     4.92     4.92     4.92     4.83

 3 COMBINED AT
+                 C90       .14    1   FLOW        186.     183.     180.     177.     175.
                                      TIME        3.25     3.25     3.25     3.25     3.25

 ROUTED TO
+                 R90       .14    1   FLOW        170.     167.     164.     161.     160.
                                      TIME        3.33     3.33     3.33     3.33     3.33

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      11.73    11.71    11.69    11.67    11.66
                                      TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                 S94       .13    1   FLOW        197.     194.     191.     187.     186.
                                      TIME        3.25     3.25     3.25     3.25     3.25

 HYDROGRAPH AT
+                 S100      .15    1   FLOW        214.     211.     207.     204.     202.
                                      TIME        3.25     3.25     3.25     3.25     3.25

 HYDROGRAPH AT
+                 SH1       .03    1   FLOW         38.      38.      37.      37.      37.
                                      TIME        3.33     3.42     3.42     3.42     3.42

 ROUTED TO
+                 RBH1      .03    1   FLOW          1.       1.       1.       1.       1.
                                      TIME        6.08     6.08     6.08     6.08     6.08

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.57    12.52    12.47    12.42    12.39
                                      TIME        6.17     6.17     6.17     6.17     6.17

 3 COMBINED AT
+                 C100      .31    1   FLOW        412.     405.     398.     391.     388.
                                      TIME        3.25     3.25     3.25     3.25     3.25

 ROUTED TO
+                 R100      .31    1   FLOW        359.     355.     351.     346.     344.
                                      TIME        3.33     3.33     3.33     3.33     3.33

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.62    12.61    12.60    12.58    12.58
                                      TIME        3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                 SE1       .04    1   FLOW         53.      52.      52.      51.      50.
                                      TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                 RBE1      .04    1   FLOW          2.       2.       2.       2.       2.
                                      TIME        6.08     6.08     6.08     6.08     6.08

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.63    12.59    12.54    12.49    12.47
                                      TIME        6.17     6.17     6.17     6.17     6.17

 HYDROGRAPH AT
+                 SGC5      .03    1   FLOW         28.      28.      27.      27.      27.
                                      TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
```

```
+                 RBGC5      .03    1   FLOW          1.      1.      1.      1.      1.
                                         TIME        6.08    6.17    6.00    6.00    6.00

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       12.26   12.20   12.14   12.08   12.05
                                         TIME        6.17    6.17    6.17    6.17    6.17

 4 COMBINED AT
+                 C103       .51    1   FLOW        531.    523.    516.    508.    505.
                                         TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                 SGC2       .02    1   FLOW         23.     23.     22.     22.     22.
                                         TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                 RBGC2      .02    1   FLOW          1.      1.      1.      1.      1.
                                         TIME        5.67    5.67    5.67    5.67    5.67

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       12.21   12.15   12.09   12.03   12.00
                                         TIME        5.92    5.92    5.92    5.92    5.92

 HYDROGRAPH AT
+                 SO1        .01    1   FLOW         17.     16.     16.     16.     16.
                                         TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                 RBO1       .01    1   FLOW          1.      1.      1.      1.      1.
                                         TIME        4.75    4.75    4.75    4.75    4.58

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       12.13   12.08   12.04   11.99   11.97
                                         TIME        4.75    4.75    4.75    4.75    4.75

  2 COMBINED AT
+                 CO         .04    1   FLOW          3.      3.      3.      2.      2.
                                         TIME        5.25    5.25    5.08    5.08    5.08

 HYDROGRAPH AT
+                 SM2        .03    1   FLOW         31.     31.     30.     30.     30.
                                         TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                 RBM2       .03    1   FLOW          1.      1.      1.      1.      1.
                                         TIME        5.83    5.83    5.92    5.92    5.92

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       12.78   12.72   12.66   12.61   12.58
                                         TIME        6.00    6.00    6.00    6.00    6.00

  2 COMBINED AT
+                 C28        .07    1   FLOW          4.      4.      4.      4.      4.
                                         TIME        5.33    5.33    5.33    5.33    5.33

  2 COMBINED AT
+                 NULL       .58    1   FLOW        532.    525.    518.    510.    506.
                                         TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                 SK1        .03    1   FLOW         34.     34.     33.     33.     33.
                                         TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                 RBK1       .03    1   FLOW          1.      1.      1.      1.      1.
                                         TIME        5.83    5.83    5.83    5.83    5.83
```

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       12.56    12.51    12.46    12.41    12.39
                                      TIME         6.08     6.08     6.08     6.08     6.08

 HYDROGRAPH AT
+                   SF1       .02  1   FLOW          25.      25.      24.      24.      24.
                                      TIME         3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBF1       .02  1   FLOW           1.       1.       1.       1.       1.
                                      TIME         5.08     5.08     5.08     5.08     5.08

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       12.27    12.22    12.17    12.12    12.10
                                      TIME         5.25     5.25     5.25     5.25     5.25

  2 COMBINED AT
+                  NULL       .04  1   FLOW           3.       3.       3.       3.       3.
                                      TIME         5.58     5.58     5.50     5.50     5.50

 HYDROGRAPH AT
+                   SG1       .03  1   FLOW          41.      40.      40.      39.      39.
                                      TIME         3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBG1       .03  1   FLOW           1.       1.       1.       1.       1.
                                      TIME         6.08     6.08     6.08     6.08     6.17

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       12.59    12.54    12.49    12.43    12.41
                                      TIME         6.25     6.25     6.17     6.17     6.17

 HYDROGRAPH AT
+                   SG2       .03  1   FLOW          41.      40.      40.      39.      39.
                                      TIME         3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBG2       .03  1   FLOW           1.       1.       1.       1.       1.
                                      TIME         6.08     6.08     6.08     6.08     6.17

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE       12.59    12.54    12.49    12.43    12.41
                                      TIME         6.25     6.25     6.17     6.17     6.17

  2 COMBINED AT
+                  NULL       .06  1   FLOW           3.       3.       3.       3.       3.
                                      TIME         6.17     6.08     6.08     6.08     6.08


*** NORMAL END OF HEC-1 ***
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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  04/01/1993  TIME  07:00:35 *
*                                      *
****************************************
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```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X       X     X        XX
X     X  X       X               X
XXXXXXX  XXXX    X       XXXXX   X
X     X  X       X               X
X     X  X       X     X         X
X     X  XXXXXXX   XXXXX        XXX
```

100 Year Event - Post Development Conditions

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL  LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID        DWP25P
  2           ID        DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-ZN-92
  3           ID        25 YR - 6HR RAINFALL EVENT
  4           ID        HEC-1 HYPOTHETICAL DISTRIBUTION
  5           ID        LAG TIMES: travel time calculations
  6           ID        CURVE NUMBERS: RANGE 76 TO 88
  7           ID                VEGETATION: POOR CONDITION DESERT SHRUB
  8           ID                SOIL TYPES:  A, B, C & D
  9           ID        DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
 10           ID        AREA(SQMI)      %
 11           ID        --------------------
 12           ID         0             1.0
 13           ID         1             0.99
 14           ID         2             0.98
 15           ID         3             0.97
 16           ID         4             0.965
 17           ID        --------------------
              *DIAGRAM
 18           IT       5                    300
 19           IO       5       0
 20           JR     PREC   1.000    0.99   0.980   0.970   0.965

 21           KK     S14
 22           KM    SUB-BASIN S14: OFF-SITE
 23           PH                   0.65    1.18    1.90    2.17    2.34    2.68
 24           BA    .119
 25           LS              87     29.
 26           UD     .18

 27           KK     S16
 28           KM    SUB-BASIN S16: OFF-SITE
 29           BA    .044
 30           LS              86     32.
 31           UD    .147

 32           KK     S20
 33           KM    SUB-BASIN S20: OFF-SITE
 34           BA    1.91
 35           LS              87     30.
 36           UD    .841

 37           KK     R20
 38           KM     ROUTE S20 THRU S24
 39           KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 40           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 41           KM      OVERBANKS = 50':(TYPICAL)
 42           RS       1    ELEV      10
 43           RC    .055    .035    .055    2050    .017
 44           RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 45           RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  46          KK    SCOM
  47          KM    SUB-BASIN SCOM: ON-SITE
  48          BA    .020
  49          LS              85      50
  50          UD    .252

  51          KK   RBCOM
  52          KM     RETENTION BASIN
  53          RS       1    ELEV      10
  54          SV       0     1.0     2.8     10.
  55          SE      10     11.     13.     15.
  56          SQ       0     1.0     1.5    200.

  57          KK     C24
  58          KM     COMBINE S14, S16, S20/R20, & SCOM
  59          HC       4

  60          KK   DIV1R
  61          KM    DIVERT #1:DIV1R - FLOW IN MAIN CHANNEL: WASH 1
  62          DT   DIV1L
  63          DI      0.      9.    132.    458.   1140.   2174.   3491.
  64          DQ      0.      0.     48.    223.    647.   1330.   2208.

  65          KK   RET1L
  66          KM    RETRIEVE DIV1L
  67          DR   DIV1L

  68          KK   DIV2R
  69          KM    DIVERT #2:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
  70          DT   DIV2L
  71          DI      0.      8.     50.    188.    370.    697.   1376.
  72          DQ      0.      8.     38.    119.    203.    361.    613.

  73          KK     C25
  74          KM    COMBINE DIV1R & DIV2R
  75          HC       2

  76          KK     R25
  77          KM    ROUTE C25 THRU SGC1
  78          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
  79          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
  80          KM      OVERBANKS = 50':(TYPICAL)
  81          RS       1    ELEV      10
  82          RC    .055    .035    .055    3550    .017
  83          RX   48.5    51.5   101.5     104     164   166.5   216.5   219.5
  84          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

  85          KK      S8
  86          KM    SUB-BASIN S8: OFF-SITE
  87          BA    .031
  88          LS              85     26.
  89          UD    .110
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 90           KK     S10
 91           KM    SUB-BASIN S10: OFF-SITE
 92           BA    .368
 93           LS              87     19.
 94           UD    .252

 95           KK     S12
 96           KM    SUB-BASIN S12: OFF-SITE
 97           BA    .034
 98           LS              85     32.
 99           UD    .127

100           KK    SGC1
101           KM    SUB-BASIN SGC1: ON-SITE
102           BA    .012
103           LS              85
104           UD    .267

105           KK   RBGC1
106           KM     RETENTION BASIN
107           RS       1    ELEV      10
108           SV       0      .5     1.0     10.
109           SE      10     11.     13.     15.
110           SQ       0     1.0     1.5    200.

111           KK     C13
112           KM     COMBINE S8, S10, S12, SGC1, & R25: WASH 1
113           HC       5

114           KK   DIV3R
115           KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
116           KM              DIV2L - WASH 1B
117           DT   DIV3L
118           DI      0.    315.    550.    875.   1280.   1975.
119           DQ      0.     0.1     20.     65.    110.    380.

120           KK   RET3L
121           KM     RETRIEVE DIV3L:WASH 1B
122           DR   DIV3L

123           KK      SQ
124           KM    SUB-BASIN SQ: ON-SITE
125           BA    .015
126           LS              85     35.
127           UD    .301

128           KK     RBQ
129           KM     RETENTION BASIN
130           RS       1    ELEV      10
131           SV       0      .7     1.4     10.
132           SE      10     11.     13.     15.
133           SQ       0     1.0     1.5    200.
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 134          KK     C1B
 135          KM      WASH 1B
 136          HC       2

 137          KK   RET2L
 138          KM     RETRIEVE DIV2L
 139          DR   DIV2L

 140          KK     ST2
 141          KM    SUB-BASIN ST2: ON-SITE
 142          BA    .029
 143          LS              77     35.
 144          UD    .315

 145          KK    RBT2
 146          KM     RETENTION BASIN
 147          RS       1    ELEV      10
 148          SV       0     1.0     2.0     10.
 149          SE      10     11.     13.     15.
 150          SQ       0     1.0     1.5    200.

 151          KK     SS1
 152          KM    SUB-BASIN SS1: ON-SITE
 153          BA    .019
 154          LS              77     35.
 155          UD    .309

 156          KK    RBS1
 157          KM     RETENTION BASIN
 158          RS       1    ELEV      10
 159          SV       0      .7     1.3     10.
 160          SE      10     11.     13.     15.
 161          SQ       0     1.0     1.5    200.

 162          KK     C2L
 163          KM     COMBINE
 164          HC       3

 165          KK     R2L
 166          KM     ROUTE C2L
 167          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 168          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 169          KM      OVERBANKS = 40':(TYPICAL)
 170          RS       2    ELEV      10
 171          RC    .055    .035    .055    3850    .017
 172          RX   48.5    51.5    91.5      94     114   116.5   156.5   159.5
 173          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 174          KK     SR1
 175          KM    SUB-BASIN SR1: ON-SITE
 176          BA    .021
 177          LS              77     35.
 178          UD    .318
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 179          KK    RBR1
 180          KM     RETENTION BASIN
 181          RS       1    ELEV      10
 182          SV       0      .8     1.5     10.
 183          SE      10     11.     13.     15.
 184          SQ       0     1.0     1.5    200.

 185          KK     SP1
 186          KM    SUB-BASIN SP: ON-SITE
 187          BA    .018
 188          LS              77     35.
 189          UD    .313

 190          KK    RBP1
 191          KM     RETENTION BASIN
 192          RS       1    ELEV      10
 193          SV       0      .7     1.3     10.
 194          SE      10     11.     13.     15.
 195          SQ       0     1.0     1.5    200.

 196          KK     SM1
 197          KM    SUB-BASIN SM1: ON-SITE
 198          BA    .019
 199          LS              78     35.
 200          UD    .305

 201          KK    RBM1
 202          KM     RETENTION BASIN
 203          RS       1    ELEV      10
 204          SV       0      .7     1.4     10.
 205          SE      10     11.     13.     15.
 206          SQ       0     1.0     1.5    200.

 207          KK     C26
 208          KM    COMBINE R2L, RBR, RBP, RBM1 : WASH 1B
 209          HC       4

 210          KK    NULL
 211          HC       2

 212          KK     S30
 213          KM    SUB-BASIN S30: OFF-SITE
 214          BA     .42
 215          LS              88     38.
 216          UD    .452

 217          KK     R30
 218          KM    ROUTE S30 THRU S32: WASH 2A
 219          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 220          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 221          KM      OVERBANKS = 40':(TYPICAL)
 222          RS       1    ELEV      10
 223          RC    .055    .035    .055    2250    .018
 224          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 225          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 226          KK     SA1
 227          KM    SUB-BASIN SA: ON-SITE
 228          BA    .027
 229          LS              80     35.
 230          UD    .297

 231          KK    RBA1
 232          KM     RETENTION BASIN
 233          RS       1    ELEV      10
 234          SV       0     1.0     2.1     10.
 235          SE      10     11.     13.     15.
 236          SQ       0     1.0     1.5    200.

 237          KK     C32
 238          KM    COMBINE S30/R30 & RBA: WASH 2A
 239          HC       2

 240          KK     S40
 241          KM    SUB-BASIN S40: OFF-SITE
 242          BA    1.60
 243          LS              84     15.
 244          UD    .985

 245          KK     R48
 246          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 247          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 248          KM      OVERBANKS = 40':(TYPICAL)
 249          RS       2    ELEV      10
 250          RC    .055    .035    .055    8400    .023
 251          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 252          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 253          KK     S50
 254          KM    SUB-BASIN S50: OFF-SITE
 255          BA     .53
 256          LS              86     35.
 257          UD    .535

 258          KK     C51
 259          KM    COMBINE R48/S40 & S50: WASH 2
 260          HC       2

 261          KK     SJ1
 262          KM    SUB-BASIN SJ: ON-SITE
 263          BA    .027
 264          LS              85     35.
 265          UD    .305
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 266          KK    RBJ1
 267          KM     RETENTION BASIN
 268          RS       1    ELEV      10
 269          SV       0     1.3     2.5     10.
 270          SE      10     11.     13.     15.
 271          SQ       0     1.0     1.5    200.

 272          KK     C52
 273          HC       2

 274          KK     R51
 275          KM    ROUTE C51 THRU BASIN 54: WASH 2
 276          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 277          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 278          KM      OVERBANKS = 40':(TYPICAL)
 279          RS       2    ELEV      10
 280          RC    .055    .035    .055    3050    .015
 281          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 282          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 283          KK    SGC6
 284          KM    SUB-BASIN SGC6: ON-SITE
 285          BA    .017
 286          LS              85
 287          UD    .251

 288          KK   RBGC6
 289          KM     RETENTION BASIN
 290          RS       1    ELEV      10
 291          SV       0      .6     1.2     10.
 292          SE      10     11.     13.     15.
 293          SQ       0     1.0     1.5    200.

 294          KK     ST1
 295          KM    SUB-BASIN ST1: ON-SITE
 296          BA    .029
 297          LS              77     35.
 298          UD    .315

 299          KK    RBT1
 300          KM     RETENTION BASIN
 301          RS       1    ELEV      10
 302          SV       0     1.0     2.0     10.
 303          SE      10     11.     13.     15.
 304          SQ       0     1.0     1.5    200.

 305          KK     C54
 306          KM    COMBINE RBT1,RBGC6, C51, C32: WASH 2
 307          HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 308          KK     R54
 309          KM    ROUTE C54 THRU BASIN 56: WASH 2
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 50':(TYPICAL)
 313          RS       2    ELEV      10
 314          RC    .055    .035    .055    4150    .016
 315          RX   48.5    51.5   101.5     104     164   166.5   216.5   219.5
 316          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     SU1
 318          KM    SUB-BASIN SU: ON-SITE
 319          BA    .048
 320          LS              77     35.
 321          UD    .330

 322          KK    RBU1
 323          KM     RETENTION BASIN
 324          RS       1    ELEV      10
 325          SV       0     1.2     3.5     10.
 326          SE      10     11.     13.     15.
 327          SQ       0     1.2     1.5    200.

 328          KK     SL1
 329          KM    SUB-BASIN SL: ON-SITE
 330          BA    .029
 331          LS              78     35.
 332          UD    .318

 333          KK    RBL1
 334          KM     RETENTION BASIN
 335          RS       1    ELEV      10
 336          SV       0     1.0     2.1     10.
 337          SE      10     11.     13.     15.
 338          SQ       0     1.0     1.5    200.

 339          KK     SN2
 340          KM    SUB-BASIN SN2: ON-SITE
 341          BA    .007
 342          LS              85     35.
 343          UD    .276

 344          KK    RBN2
 345          KM     RETENTION BASIN
 346          RS       1    ELEV      10
 347          SV       0      .4      .7     10.
 348          SE      10     11.     13.     15.
 349          SQ       0     1.0     1.5    200.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 350          KK     C56
 351          KM    COMBINE R54,RBL,RBN2,RBU: WASH 2
 352          HC       4

 353          KK    SGC3
 354          KM    SUB-BASIN GC3: ON-SITE
 355          BA    .019
 356          LS              85
 357          UD    .401

 358          KK   RBGC3
 359          KM     RETENTION BASIN
 360          RS       1    ELEV      10
 361          SV       0      .9     1.7     10.
 362          SE      10     11.     13.     15.
 363          SQ       0     1.0     1.5    200.

 364          KK    NULL
 365          HC       3

 366          KK     S60
 367          KM    SUB-BASIN S60: OFF-SITE
 368          BA    1.81
 369          LS              87     16.
 370          UD    .933

 371          KK   DIV4R
 372          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 373          DT   DIV4L
 374          DI      0.    294.    633.   1081.   1186.   2008.
 375          DQ      0.    188.    372.    606.    530.   1028.

 376          KK     S70
 377          KM    SUB-BASIN S70: OFF-SITE
 378          BA    .029
 379          LS              85     40.
 380          UD    .120

 381          KK     SI3
 382          KM    SUB-BASIN SI3: ON-SITE
 383          BA    .013
 384          LS              85     35.
 385          UD    .286

 386          KK    RBI3
 387          KM     RETENTION BASIN
 388          RS       1    ELEV      10
 389          SV       0      .6     1.2     10.
 390          SE      10     11.     13.     15.
 391          SQ       0     1.0     1.5    200.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 392          KK     C70
 393          KM    COMBINE DIV4R,RBI3 & S70: WASH 3
 394          HC      3

 395          KK     R70
 396          KM    ROUTE C70
 397          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 398          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 399          KM      OVERBANKS = 40':(TYPICAL)
 400          RS      2    ELEV      10
 401          RC   .055    .035    .055    3000    .017
 402          RX   48.5    51.5    91.5      94     114   116.5   156.5   159.5
 403          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 404          KK     SB1
 405          KM    SUB-BASIN SB1: ON-SITE
 406          BA   .030
 407          LS            84     35.
 408          UD   .307

 409          KK    RBB1
 410          KM     RETENTION BASIN
 411          RS      1    ELEV      10
 412          SV      0     1.4     2.7     10.
 413          SE     10     11.     13.     15.
 414          SQ      0     1.0     1.5    200.

 415          KK    SGC4
 416          KM    SUB-BASIN GC4: ON-SITE
 417          BA   .032
 418          LS            85
 419          UD   .251

 420          KK   RBGC4
 421          KM     RETENTION BASIN
 422          RS      1    ELEV      10
 423          SV      0     1.1     2.2     10.
 424          SE     10     11.     13.     15.
 425          SQ      0     1.0     1.5    200.

 426          KK     C71
 427          KM       COMBINE R70, RBB,RBGC4:WASH 3
 428          HC      3

 429          KK     R71
 430          KM    ROUTE C71
 431          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 432          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 433          KM      OVERBANKS = 40':(TYPICAL)
 434          RS      2    ELEV      10
 435          RC   .055    .035    .055    3850    .017
 436          RX   48.5    51.5    91.5      94     114   116.5   156.5   159.5
 437          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 438          KK     SN1
 439          KM    SUB-BASIN SN1: ON-SITE
 440          BA    .060
 441          LS              85     35.
 442          UD    .276

 443          KK    RBN1
 444          KM     RETENTION BASIN
 445          RS       1    ELEV      10
 446          SV       0     2.7     5.5     10.
 447          SE      10     11.     13.     15.
 448          SQ       0     1.8     2.0    200.

 449          KK     C62
 450          KM    COMBINE RBN1 & R71: WASH 3
 451          HC       2

 452          KK    NULL
 453          HC       2

 454          KK   RET4L
 455          KM    RETRIEVE DIV4L: WASH 4
 456          DR   DIV4L

 457          KK   DIV5R
 458          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 459          DT   DIV5L
 460          DI      0.     11.     71.    204.    665.   1556.   3038.
 461          DQ      0.      0.     24.    128.    329.    762.   1656.

 462          KK     R5R
 463          KM    ROUTE DIV5R THRU S66: WASH 4A
 464          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 465          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 466          KM      OVERBANKS = 40':(TYPICAL)
 467          RS       1    ELEV      10
 468          RC    .055    .035    .055    1470    .018
 469          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 470          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 471          KK     SC1
 472          KM    SUB-BASIN SC1: ON-SITE
 473          BA    .025
 474          LS              77     35.
 475          UD    .309

 476          KK    RBC1
 477          KM     RETENTION BASIN
 478          RS       1    ELEV      10
 479          SV       0     1.4     2.7     10.
 480          SE      10     11.     13.     15.
 481          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 90           KK     S10
 91           KM    SUB-BASIN S10: OFF-SITE
 92           BA    .368
 93           LS              87     19.
 94           UD    .252

 95           KK     S12
 96           KM    SUB-BASIN S12: OFF-SITE
 97           BA    .034
 98           LS              85     32.
 99           UD    .127

100           KK    SGC1
101           KM    SUB-BASIN SGC1: ON-SITE
102           BA    .012
103           LS              85
104           UD    .267

105           KK   RBGC1
106           KM     RETENTION BASIN
107           RS       1    ELEV      10
108           SV       0      .5     1.0     10.
109           SE      10     11.     13.     15.
110           SQ       0     1.0     1.5    200.

111           KK     C13
112           KM     COMBINE S8, S10, S12, SGC1, & R25: WASH 1
113           HC       5

114           KK   DIV3R
115           KM    DIVERT #3:DIV2R - FLOW IN MAIN CHANNEL: WASH 1
116           KM              DIV2L - WASH 1B
117           DT   DIV3L
118           DI      0.    315.    550.    875.   1280.   1975.
119           DQ      0.     0.1     20.     65.    110.    380.

120           KK   RET3L
121           KM     RETRIEVE DIV3L:WASH 1B
122           DR   DIV3L

123           KK      SQ
124           KM    SUB-BASIN SQ: ON-SITE
125           BA    .015
126           LS              85     35.
127           UD    .301

128           KK     RBQ
129           KM     RETENTION BASIN
130           RS       1    ELEV      10
131           SV       0      .7     1.4     10.
132           SE      10     11.     13.     15.
133           SQ       0     1.0     1.5    200.
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 134          KK     C1B
 135          KM      WASH 1B
 136          HC       2

 137          KK   RET2L
 138          KM     RETRIEVE DIV2L
 139          DR   DIV2L

 140          KK     ST2
 141          KM    SUB-BASIN ST2: ON-SITE
 142          BA    .029
 143          LS              77     35.
 144          UD    .315

 145          KK    RBT2
 146          KM     RETENTION BASIN
 147          RS       1    ELEV      10
 148          SV       0     1.0     2.0     10.
 149          SE      10     11.     13.     15.
 150          SQ       0     1.0     1.5    200.

 151          KK     SS1
 152          KM    SUB-BASIN SS1: ON-SITE
 153          BA    .019
 154          LS              77     35.
 155          UD    .309

 156          KK    RBS1
 157          KM     RETENTION BASIN
 158          RS       1    ELEV      10
 159          SV       0      .7     1.3     10.
 160          SE      10     11.     13.     15.
 161          SQ       0     1.0     1.5    200.

 162          KK     C2L
 163          KM     COMBINE
 164          HC       3

 165          KK     R2L
 166          KM     ROUTE C2L
 167          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 168          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 169          KM      OVERBANKS = 40':(TYPICAL)
 170          RS       2    ELEV      10
 171          RC    .055    .035    .055    3850    .017
 172          RX   48.5    51.5    91.5      94     114   116.5   156.5   159.5
 173          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 174          KK     SR1
 175          KM    SUB-BASIN SR1: ON-SITE
 176          BA    .021
 177          LS              77     35.
 178          UD    .318
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 179          KK    RBR1
 180          KM     RETENTION BASIN
 181          RS       1    ELEV      10
 182          SV       0      .8     1.5     10.
 183          SE      10     11.     13.     15.
 184          SQ       0     1.0     1.5    200.

 185          KK     SP1
 186          KM    SUB-BASIN SP: ON-SITE
 187          BA    .018
 188          LS              77     35.
 189          UD    .313

 190          KK    RBP1
 191          KM     RETENTION BASIN
 192          RS       1    ELEV      10
 193          SV       0      .7     1.3     10.
 194          SE      10     11.     13.     15.
 195          SQ       0     1.0     1.5    200.

 196          KK     SM1
 197          KM    SUB-BASIN SM1: ON-SITE
 198          BA    .019
 199          LS              78     35.
 200          UD    .305

 201          KK    RBM1
 202          KM     RETENTION BASIN
 203          RS       1    ELEV      10
 204          SV       0      .7     1.4     10.
 205          SE      10     11.     13.     15.
 206          SQ       0     1.0     1.5    200.

 207          KK     C26
 208          KM    COMBINE R2L, RBR, RBP, RBM1 : WASH 1B
 209          HC       4

 210          KK    NULL
 211          HC       2

 212          KK     S30
 213          KM    SUB-BASIN S30: OFF-SITE
 214          BA     .42
 215          LS              88     38.
 216          UD    .452

 217          KK     R30
 218          KM    ROUTE S30 THRU S32: WASH 2A
 219          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 220          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 221          KM      OVERBANKS = 40':(TYPICAL)
 222          RS       1    ELEV      10
 223          RC    .055    .035    .055    2250    .018
 224          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 225          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 226          KK     SA1
 227          KM    SUB-BASIN SA: ON-SITE
 228          BA    .027
 229          LS              80     35.
 230          UD    .297

 231          KK    RBA1
 232          KM     RETENTION BASIN
 233          RS       1    ELEV      10
 234          SV       0     1.0     2.1     10.
 235          SE      10     11.     13.     15.
 236          SQ       0     1.0     1.5    200.

 237          KK     C32
 238          KM    COMBINE S30/R30 & RBA: WASH 2A
 239          HC       2

 240          KK     S40
 241          KM    SUB-BASIN S40: OFF-SITE
 242          BA    1.60
 243          LS              84     15.
 244          UD    .985

 245          KK     R48
 246          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 247          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 248          KM      OVERBANKS = 40':(TYPICAL)
 249          RS       2    ELEV      10
 250          RC    .055    .035    .055    8400    .023
 251          RX    48.5    51.5    91.5      94     106   108.5   148.5   151.5
 252          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 253          KK     S50
 254          KM    SUB-BASIN S50: OFF-SITE
 255          BA     .53
 256          LS              86     35.
 257          UD    .535

 258          KK     C51
 259          KM    COMBINE R48/S40 & S50: WASH 2
 260          HC       2

 261          KK     SJ1
 262          KM    SUB-BASIN SJ: ON-SITE
 263          BA    .027
 264          LS              85     35.
 265          UD    .305
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 266          KK    RBJ1
 267          KM     RETENTION BASIN
 268          RS       1    ELEV      10
 269          SV       0      1.3     2.5     10.
 270          SE      10      11.     13.     15.
 271          SQ       0      1.0     1.5    200.

 272          KK     C52
 273          HC       2

 274          KK     R51
 275          KM    ROUTE C51 THRU BASIN 54: WASH 2
 276          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 277          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 278          KM      OVERBANKS = 40':(TYPICAL)
 279          RS       2    ELEV      10
 280          RC    .055    .035    .055    3050    .015
 281          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 282          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 283          KK    SGC6
 284          KM    SUB-BASIN SGC6: ON-SITE
 285          BA    .017
 286          LS              85
 287          UD    .251

 288          KK   RBGC6
 289          KM     RETENTION BASIN
 290          RS       1    ELEV      10
 291          SV       0       .6     1.2     10.
 292          SE      10      11.     13.     15.
 293          SQ       0      1.0     1.5    200.

 294          KK     ST1
 295          KM    SUB-BASIN ST1: ON-SITE
 296          BA    .029
 297          LS              77     35.
 298          UD    .315

 299          KK    RBT1
 300          KM     RETENTION BASIN
 301          RS       1    ELEV      10
 302          SV       0      1.0     2.0     10.
 303          SE      10      11.     13.     15.
 304          SQ       0      1.0     1.5    200.

 305          KK     C54
 306          KM    COMBINE RBT1,RBGC6, C51, C32: WASH 2
 307          HC       4
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 308          KK     R54
 309          KM    ROUTE C54 THRU BASIN 56: WASH 2
 310          KM      BOTTOM WIDTH OF MAIN CHANNEL = 60':(TYPICAL)
 311          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 312          KM      OVERBANKS = 50':(TYPICAL)
 313          RS       2    ELEV      10
 314          RC    .055    .035    .055    4150    .016
 315          RX    48.5    51.5   101.5     104     164   166.5   216.5   219.5
 316          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 317          KK     SU1
 318          KM    SUB-BASIN SU: ON-SITE
 319          BA    .048
 320          LS              77     35.
 321          UD    .330

 322          KK    RBU1
 323          KM     RETENTION BASIN
 324          RS       1    ELEV      10
 325          SV       0     1.2     3.5     10.
 326          SE      10     11.     13.     15.
 327          SQ       0     1.2     1.5    200.

 328          KK     SL1
 329          KM    SUB-BASIN SL: ON-SITE
 330          BA    .029
 331          LS              78     35.
 332          UD    .318

 333          KK    RBL1
 334          KM     RETENTION BASIN
 335          RS       1    ELEV      10
 336          SV       0     1.0     2.1     10.
 337          SE      10     11.     13.     15.
 338          SQ       0     1.0     1.5    200.

 339          KK     SN2
 340          KM    SUB-BASIN SN2: ON-SITE
 341          BA    .007
 342          LS              85     35.
 343          UD    .276

 344          KK    RBN2
 345          KM     RETENTION BASIN
 346          RS       1    ELEV      10
 347          SV       0      .4      .7     10.
 348          SE      10     11.     13.     15.
 349          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 350          KK     C56
 351          KM    COMBINE R54,RBL,RBN2,RBU: WASH 2
 352          HC       4

 353          KK    SGC3
 354          KM    SUB-BASIN GC3: ON-SITE
 355          BA    .019
 356          LS              85
 357          UD    .401

 358          KK   RBGC3
 359          KM     RETENTION BASIN
 360          RS       1    ELEV      10
 361          SV       0      .9     1.7     10.
 362          SE      10     11.     13.     15.
 363          SQ       0     1.0     1.5    200.

 364          KK    NULL
 365          HC       3

 366          KK     S60
 367          KM    SUB-BASIN S60: OFF-SITE
 368          BA    1.81
 369          LS              87     16.
 370          UD    .933

 371          KK   DIV4R
 372          KM    DIVERT 4: DIV4R-> WASH 3 & DIV4L-> WASH 4
 373          DT   DIV4L
 374          DI      0.    294.    633.   1081.   1186.   2008.
 375          DQ      0.    188.    372.    606.    530.   1028.

 376          KK     S70
 377          KM    SUB-BASIN S70: OFF-SITE
 378          BA    .029
 379          LS              85     40.
 380          UD    .120

 381          KK     SI3
 382          KM    SUB-BASIN SI3: ON-SITE
 383          BA    .013
 384          LS              85     35.
 385          UD    .286

 386          KK    RBI3
 387          KM     RETENTION BASIN
 388          RS       1    ELEV      10
 389          SV       0      .6     1.2     10.
 390          SE      10     11.     13.     15.
 391          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 392          KK     C70
 393          KM    COMBINE DIV4R,RBI3 & S70: WASH 3
 394          HC       3

 395          KK     R70
 396          KM    ROUTE C70
 397          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 398          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 399          KM      OVERBANKS = 40':(TYPICAL)
 400          RS       2    ELEV      10
 401          RC    .055    .035    .055    3000    .017
 402          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 403          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5

 404          KK     SB1
 405          KM    SUB-BASIN SB1: ON-SITE
 406          BA    .030
 407          LS              84     35.
 408          UD    .307

 409          KK    RBB1
 410          KM     RETENTION BASIN
 411          RS       1    ELEV      10
 412          SV       0     1.4     2.7     10.
 413          SE      10     11.     13.     15.
 414          SQ       0     1.0     1.5    200.

 415          KK    SGC4
 416          KM    SUB-BASIN GC4: ON-SITE
 417          BA    .032
 418          LS              85
 419          UD    .251

 420          KK   RBGC4
 421          KM     RETENTION BASIN
 422          RS       1    ELEV      10
 423          SV       0     1.1     2.2     10.
 424          SE      10     11.     13.     15.
 425          SQ       0     1.0     1.5    200.

 426          KK     C71
 427          KM        COMBINE R70, RBB,RBGC4:WASH 3
 428          HC       3

 429          KK     R71
 430          KM    ROUTE C71
 431          KM      BOTTOM WIDTH OF MAIN CHANNEL = 20':(TYPICAL)
 432          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 433          KM      OVERBANKS = 40':(TYPICAL)
 434          RS       2    ELEV      10
 435          RC    .055    .035    .055    3850    .017
 436          RX    48.5    51.5    91.5      94     114   116.5   156.5   159.5
 437          RY    15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 438          KK     SN1
 439          KM    SUB-BASIN SN1: ON-SITE
 440          BA    .060
 441          LS              85     35.
 442          UD    .276

 443          KK    RBN1
 444          KM     RETENTION BASIN
 445          RS       1    ELEV      10
 446          SV       0     2.7     5.5     10.
 447          SE      10     11.     13.     15.
 448          SQ       0     1.8     2.0    200.

 449          KK     C62
 450          KM    COMBINE RBN1 & R71: WASH 3
 451          HC       2

 452          KK    NULL
 453          HC       2

 454          KK   RET4L
 455          KM    RETRIEVE DIV4L: WASH 4
 456          DR   DIV4L

 457          KK   DIV5R
 458          KM    DIVERT 5: DIV5R -> WASH 4A: DIV5L MAIN CHANNEL OF WASH 4
 459          DT   DIV5L
 460          DI      0.     11.     71.    204.    665.   1556.   3038.
 461          DQ      0.      0.     24.    128.    329.    762.   1656.

 462          KK     R5R
 463          KM    ROUTE DIV5R THRU S66: WASH 4A
 464          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 465          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 466          KM      OVERBANKS = 40':(TYPICAL)
 467          RS       1    ELEV      10
 468          RC    .055    .035    .055    1470    .018
 469          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 470          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 471          KK     SC1
 472          KM    SUB-BASIN SC1: ON-SITE
 473          BA    .025
 474          LS              77     35.
 475          UD    .309

 476          KK    RBC1
 477          KM     RETENTION BASIN
 478          RS       1    ELEV      10
 479          SV       0     1.4     2.7     10.
 480          SE      10     11.     13.     15.
 481          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

482           KK     SD1
483           KM    SUB-BASIN SS1: ON-SITE
484           BA    .024
485           LS              77     35.
486           UD    .278

487           KK    RBD1
488           KM     RETENTION BASIN
489           RS       1    ELEV      10
490           SV       0      .9     1.7     10.
491           SE      10     11.     13.     15.
492           SQ       0     1.0     1.5    200.

493           KK     C66
494           KM    COMBINE RBC1,RBD1, R5R: WASH 4A
495           HC       3

496           KK    NULL
497           HC       2

498           KK   RET5L
499           KM    RETRIEVE DIV5L: MAIN CHANNEL WASH 4
500           DR   DIV5L

501           KK     SI2
502           KM    SUB-BASIN SI2: ON-SITE
503           BA    .015
504           LS              77     35.
505           UD    .303

506           KK    RBI2
507           KM     RETENTION BASIN
508           RS       1    ELEV      10
509           SV       0      .7     1.4     10.
510           SE      10     11.     13.     15.
511           SQ       0     1.0     1.5    200.

512           KK     C5L
513           HC       2

514           KK     R5L
515           KM    ROUTE DIV5L THRU S68: WASH 4
516           KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
517           KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
518           KM      OVERBANKS = 40':(TYPICAL)
519           RS       1    ELEV      10
520           RC    .055    .035    .055    1750    .018
521           RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
522           RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 523          KK     SE2
 524          KM    SUB-BASIN SE2: ON-SITE
 525          BA    .009
 526          LS              85     35.
 527          UD    .336

 528          KK    RBE2
 529          KM     RETENTION BASIN
 530          RS       1    ELEV      10
 531          SV       0      .5      .9     10.
 532          SE      10     11.     13.     15.
 533          SQ       0     1.0     1.5    200.

 534          KK     C68
 535          KM    COMBINE RBE2 & R5L: WASH 4
 536          HC       2

 537          KK    NULL
 538          HC       2

 539          KK     S80
 540          KM    SUB-BASIN S80: OFF-SITE
 541          BA    .058
 542          LS              85
 543          UD    .166

 544          KK     S90
 545          KM    SUB-BASIN S90: OFF-SITE
 546          BA    .063
 547          LS              86
 548          UD    .152

 549          KK     SI1
 550          KM    SUB-BASIN SI1: ON-SITE
 551          BA    .015
 552          LS              85     35.
 553          UD    .301

 554          KK    RBI1
 555          KM     RETENTION BASIN
 556          RS       1    ELEV      10
 557          SV       0      .7     1.4     10.
 558          SE      10     11.     13.     15.
 559          SQ       0     1.0     1.5    200.

 560          KK     C90
 561          HC       3

 562          KK     R90
 563          KM    ROUTE C90
 564          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 565          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 566          KM      OVERBANKS = 40':(TYPICAL)
 567          RS       2    ELEV      10
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 568          RC    .055    .035    .055    3500    .018
 569          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 570          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 571          KK     S94
 572          KM    SUB-BASIN S94: OFF-SITE
 573          BA    .132
 574          LS              86
 575          UD    .186

 576          KK    S100
 577          KM    SUB-BASIN S100: OFF-SITE
 578          BA    .148
 579          LS              86
 580          UD    .196

 581          KK     SH1
 582          KM    SUB-BASIN SH: ON-SITE
 583          BA    .029
 584          LS              85     35.
 585          UD    .313

 586          KK    RBH1
 587          KM     RETENTION BASIN
 588          RS       1    ELEV      10
 589          SV       0     1.4     2.7     10.
 590          SE      10     11.     13.     15.
 591          SQ       0     1.0     1.5    200.

 592          KK    C100
 593          HC       3

 594          KK    R100
 595          KM    ROUTE C100 :WASH 6
 596          KM      BOTTOM WIDTH OF MAIN CHANNEL = 12':(TYPICAL)
 597          KM      DEPTH OF MAIN CHANNEL = 2.5':(TYPICAL)
 598          KM      OVERBANKS = 40':(TYPICAL)
 599          RS       2    ELEV      10
 600          RC    .055    .035    .055    2400    .018
 601          RX   48.5    51.5    91.5      94     106   108.5   148.5   151.5
 602          RY   15.5    12.5    12.5      10      10    12.5    12.5    15.5

 603          KK     SE1
 604          KM    SUB-BASIN SE1: ON-SITE
 605          BA    .038
 606          LS              85     35.
 607          UD    .293

 608          KK    RBE1
 609          KM     RETENTION BASIN
 610          RS       1    ELEV      10
 611          SV       0     1.7     3.5     10.
 612          SE      10     11.     13.     15.
 613          SQ       0     1.2     2.0    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 614          KK    SGC5
 615          KM    SUB-BASIN GC5: ON-SITE
 616          BA    .029
 617          LS              85
 618          UD    .351

 619          KK   RBGC5
 620          KM     RETENTION BASIN
 621          RS       1    ELEV      10
 622          SV       0     1.1     2.1     10.
 623          SE      10     11.     13.     15.
 624          SQ       0     1.0     1.5    200.

 625          KK    C103
 626          KM        COMBINE RBGC5,RBE1,R90,R100:WASH 6
 627          HC       4

 628          KK    SGC2
 629          KM    SUB-BASIN GC2: ON-SITE
 630          BA    .024
 631          LS              85
 632          UD    .359

 633          KK   RBGC2
 634          KM     RETENTION BASIN
 635          RS       1    ELEV      10
 636          SV       0      .9     1.7     10.
 637          SE      10     11.     13.     15.
 638          SQ       0     1.0     1.5    200.

 639          KK     SO1
 640          KM    SUB-BASIN SO: ON-SITE
 641          BA    .014
 642          LS              81     35.
 643          UD    .315

 644          KK    RBO1
 645          KM     RETENTION BASIN
 646          RS       1    ELEV      10
 647          SV       0      .6     1.2     10.
 648          SE      10     11.     13.     15.
 649          SQ       0     1.0     1.5    200.

 650          KK      CO
 651          HC       2

 652          KK     SM2
 653          KM    SUB-BASIN SM2: ON-SITE
 654          BA    .029
 655          LS              78     35.
 656          UD    .322
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 657          KK    RBM2
 658          KM     RETENTION BASIN
 659          RS       1    ELEV      10
 660          SV       0     1.1     2.1     10.
 661          SE      10     11.     13.     15.
 662          SQ       0     1.0     1.5    200.

 663          KK     C28
 664          HC       2

 665          KK    NULL
 666          HC       2

 667          KK     SK1
 668          KM    SUB-BASIN SK1: ON-SITE
 669          BA    .026
 670          LS              85     35.
 671          UD    .318

 672          KK    RBK1
 673          KM     RETENTION BASIN
 674          RS       1    ELEV      10
 675          SV       0     1.2     2.4     10.
 676          SE      10     11.     13.     15.
 677          SQ       0     1.0     1.5    200.

 678          KK     SF1
 679          KM    SUB-BASIN SF1: ON-SITE
 680          BA    .018
 681          LS              85     35.
 682          UD    .297

 683          KK    RBF1
 684          KM     RETENTION BASIN
 685          RS       1    ELEV      10
 686          SV       0      .9     1.7     10.
 687          SE      10     11.     13.     15.
 688          SQ       0     1.0     1.5    200.

 689          KK    NULL
 690          HC       2

 691          KK     SG1
 692          KM    SUB-BASIN SG1: ON-SITE
 693          BA    .031
 694          LS              85     35.
 695          UD    .318

 696          KK    RBG1
 697          KM     RETENTION BASIN
 698          RS       1    ELEV      10
 699          SV       0     1.5     2.9     10.
 700          SE      10     11.     13.     15.
 701          SQ       0     1.0     1.5    200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 702          KK     SG2
 703          KM    SUB-BASIN SG2: ON-SITE
 704          BA    .031
 705          LS              85     35.
 706          UD    .318

 707          KK    RBG1
 708          KM     RETENTION BASIN
 709          RS       1    ELEV      10
 710          SV       0     1.5     2.9     10.
 711          SE      10     11.     13.     15.
 712          SQ       0     1.0     1.5    200.

 713          KK    NULL
 714          HC       2
 715          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  21         S14
               .
               .
  27           .         S16
               .           .
               .           .
  32           .           .         S20
               .           .           V
               .           .           V
  37           .           .         R20
               .           .           .
               .           .           .
  46           .           .           .        SCOM
               .           .           .           V
               .           .           .           V
  51           .           .           .       RBCOM
               .           .           .           .
               .           .           .           .
  57         C24.................................
               .
               .
  62           .-------->   DIV1L
  60       DIV1R
               .
               .
  67           .           .<-------   DIV1L
  65           .       RET1L
               .           .
               .           .
  70           .           .-------->   DIV2L
  68           .       DIV2R
               .           .
               .           .
  73         C25............
               V
               V
  76         R25
               .
               .
  85           .          S8
               .           .
               .           .
  90           .           .         S10
               .           .           .
               .           .           .
  95           .           .           .         S12
               .           .           .           .
               .           .           .           .
 100           .           .           .           .       SGC1
               .           .           .           .          V
               .           .           .           .          V
 105           .           .           .           .      RBGC1
               .           .           .           .          .
               .           .           .           .          .
 111         C13.............................................
               .
               .
 117           .-------->   DIV3L
 114       DIV3R
```

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                .
                .
122             .          .<-------   DIV3L
120             .      RET3L
                .          .
                .          .
123             .          .          SQ
                .          .           V
                .          .           V
128             .          .         RBQ
                .          .           .
                .          .           .
134             .       C1B............
                .          .
                .          .
139             .          .           .<-------   DIV2L
137             .          .      RET2L
                .          .           .
                .          .           .
140             .          .           .        ST2
                .          .           .         V
                .          .           .         V
145             .          .           .       RBT2
                .          .           .          .
                .          .           .          .
151             .          .           .          .        SS1
                .          .           .          .         V
                .          .           .          .         V
156             .          .           .          .       RBS1
                .          .           .          .          .
                .          .           .          .          .
162             .          .         C2L.......................
                .          .           V
                .          .           V
165             .          .         R2L
                .          .           .
                .          .           .
174             .          .           .        SR1
                .          .           .         V
                .          .           .         V
179             .          .           .       RBR1
                .          .           .          .
                .          .           .          .
185             .          .           .          .        SP1
                .          .           .          .         V
                .          .           .          .         V
190             .          .           .          .       RBP1
                .          .           .          .          .
                .          .           .          .          .
196             .          .           .          .          .        SM1
                .          .           .          .          .         V
                .          .           .          .          .         V
201             .          .           .          .          .       RBM1
                .          .           .          .          .          .
                .          .           .          .          .          .
207             .          .         C26.................................
                .          .           .
                .          .           .
210             .       NULL............
                .          .
                .          .
212             .          .         S30
                .          .           V
                .          .           V
217             .          .         R30
                .          .           .
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226          SA1
               V
               V
231         RBA1
               .
               .
237  C32............
               .
               .
240          S40
               V
               V
245          R48
               .
               .
253            .          S50
               .            .
               .            .
258          C51............
               .
               .
261            .          SJ1
               .            V
               .            V
266            .         RBJ1
               .            .
               .            .
272          C52............
               V
               V
274          R51
               .
               .
283            .         SGC6
               .            V
               .            V
288            .        RBGC6
               .            .
               .            .
294            .            .          ST1
               .            .            V
               .            .            V
299            .            .         RBT1
               .            .            .
               .            .            .
305  C54.................................
       V
       V
308  R54
               .
               .
317          SU1
               V
               V
322         RBU1
               .
               .
328            .          SL1
               .            V
               .            V
333            .         RBL1
               .            .
               .            .
339            .            .          SN2
               .            .            V
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                                                    V
344                                               RBN2
                                                    .
                                                    .
350                  C56.................................
353                                  SGC3
                                       V
                                       V
358                                 RBGC3
                                       .
                                       .
364             NULL.......................
366                  S60
                       .
                       .
373                    .-------> DIV4L
371                DIV4R
                       .
                       .
376                                  S70
                                       .
                                       .
381                                                 SI3
                                                     V
                                                     V
386                                               RBI3
                                                     .
                                                     .
392                  C70.......................
                       V
                       V
395                  R70
                       .
                       .
404                                  SB1
                                       V
                                       V
409                                 RBB1
                                       .
                                       .
415                                                SGC4
                                                     V
                                                     V
420                                               RBGC4
                                                     .
                                                     .
426                  C71.......................
                       V
                       V
429                  R71
                       .
                       .
438                                  SN1
                                       V
                                       V
443                                 RBN1
                                       .
                                       .
449                  C62............
                       .
                       .
452             NULL............
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                .                .
                .                .
456             .                .          .<-------   DIV4L
454             .                .      RET4L
                .                .          .
                .                .          .
459             .                .          .-------->  DIV5L
457             .                .      DIV5R
                .                .          V
                .                .          V
462             .                .        R5R
                .                .          .
                .                .          .
471             .                .          .        SC1
                .                .          .         V
                .                .          .         V
476             .                .          .       RBC1
                .                .          .         .
                .                .          .         .
482             .                .          .         .        SD1
                .                .          .         .         V
                .                .          .         .         V
487             .                .          .         .       RBD1
                .                .          .         .         .
                .                .          .         .         .
493             .                .        C66.........................
                .                .          .
                .                .          .
496             .            NULL............
                .                .
                .                .
500             .                .          .<-------   DIV5L
498             .                .      RET5L
                .                .          .
                .                .          .
501             .                .          .        SI2
                .                .          .         V
                .                .          .         V
506             .                .          .       RBI2
                .                .          .         .
                .                .          .         .
512             .                .        C5L............
                .                .          V
                .                .          V
514             .                .        R5L
                .                .          .
                .                .          .
523             .                .          .        SE2
                .                .          .         V
                .                .          .         V
528             .                .          .       RBE2
                .                .          .         .
                .                .          .         .
534             .                .        C68............
                .                .          .
                .                .          .
537             .            NULL............
                .                .
                .                .
539             .                .        S80
                .                .          .
                .                .          .
544             .                .          .        S90
                .                .          .         .
                .                .          .         .
549             .                .          .         .        SI1
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                .         .         .         .         V
                .         .         .         .         V
554             .         .         .         .       RBI1
                .         .         .         .         .
                .         .         .         .         .
560             .         .       C90.........................
                .         .         V
                .         .         V
562             .         .       R90
                .         .         .
                .         .         .
571             .         .         .       S94
                .         .         .         .
                .         .         .         .
576             .         .         .         .       S100
                .         .         .         .         .
                .         .         .         .         .
581             .         .         .         .         .         SH1
                .         .         .         .         .           V
                .         .         .         .         .           V
586             .         .         .         .         .        RBH1
                .         .         .         .         .           .
                .         .         .         .         .           .
592             .         .         .       C100........................
                .         .         .         V
                .         .         .         V
594             .         .         .       R100
                .         .         .         .
                .         .         .         .
603             .         .         .         .        SE1
                .         .         .         .          V
                .         .         .         .          V
608             .         .         .         .       RBE1
                .         .         .         .         .
                .         .         .         .         .
614             .         .         .         .         .         SGC5
                .         .         .         .         .           V
                .         .         .         .         .           V
619             .         .         .         .         .       RBGC5
                .         .         .         .         .           .
                .         .         .         .         .           .
625             .         .       C103.................................
                .         .         .
                .         .         .
628             .         .         .       SGC2
                .         .         .         V
                .         .         .         V
633             .         .         .      RBGC2
.               .         .         .         .
                .         .         .         .
639             .         .         .         .        SO1
                .         .         .         .          V
                .         .         .         .          V
644             .         .         .         .       RBO1
                .         .         .         .         .
                .         .         .         .         .
650             .         .         .        CO............
                .         .         .         .
                .         .         .         .
652             .         .         .         .        SM2
                .         .         .         .          V
                .         .         .         .          V
657             .         .         .         .       RBM2
                .         .         .         .         .
                .         .         .         .         .
663             .         .         .       C28............
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            .         .         .         .
            .         .         .         .
665         .         .      NULL.........
            .         .         .
            .         .         .
667         .         .         .      SK1
            .         .         .        V
            .         .         .        V
672         .         .         .      RBK1
            .         .         .        .
            .         .         .        .
678         .         .         .        .      SF1
            .         .         .        .        V
            .         .         .        .        V
683         .         .         .        .     RBF1
            .         .         .        .        .
            .         .         .        .        .
689         .         .         .      NULL.........
                      .         .        .
                      .         .        .
691                   .         .        .      SG1
                      .         .        .        V
                      .         .        .        V
696                   .         .        .     RBG1
                      .         .        .        .
                      .         .        .        .
702                   .         .        .        .        SG2
                      .         .        .        .          V
                      .         .        .        .          V
707                   .         .        .        .       RBG1
                      .         .        .        .          .
                      .         .        .        .          .
7                     .         .        .     NULL.........

(***                D AT THIS LOCATION
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****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*            SEPTEMBER 1990            *                    *   HYDROLOGIC ENGINEERING CENTER      *
*             VERSION 4.0              *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
* RUN DATE  04/01/1993  TIME  07:00:35 *                    *          (916) 756-1104              *
*                                      *                    *                                      *
****************************************                    ****************************************
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```
                          DWP100P
                          DEL WEBB PROPERTY - POST DEVELOPMENT CONDITIONS: 59-2N-92
                          100 YR - 6HR RAINFALL EVENT
                          HEC-1 HYPOTHETICAL DISTRIBUTION
                          LAG TIMES: travel time calculations
                          CURVE NUMBERS: RANGE 76 TO 88
                                  VEGETATION: POOR CONDITION DESERT SHRUB
                                  SOIL TYPES:  A, B, C & D
                          DEPTH AREA REDUCTION FACTORS (PER NOAA HYDRO-40)
                          AREA(SQMI)      %
                          --------------------
                           0            1.0
                           1            0.99
                           2            0.98
                           3            0.97
                           4            0.965
                          --------------------

 19 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1   0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      2   0  ENDING DATE
                     NDTIME       0055  ENDING TIME
                     ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN          1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                   1.00       .99       .98       .97       .96
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

| OPERATION | STATION | AREA | PLAN | | RATIOS APPLIED TO PRECIPITATION RATIO 1 | RATIO 2 | RATIO 3 | RATIO 4 | RATIO 5 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1.00 | .99 | .98 | .97 | .96 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S14 | .12 | 1 | FLOW | 293. | 289. | 285. | 281. | 279. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S16 | .04 | 1 | FLOW | 116. | 114. | 113. | 111. | 110. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S20 | 1.91 | 1 | FLOW | 1811. | 1788. | 1764. | 1741. | 1729. |
| | | | | TIME | 3.92 | 3.92 | 3.92 | 3.92 | 3.92 |
| ROUTED TO | | | | | | | | | |
| + | R20 | 1.91 | 1 | FLOW | 1796. | 1773. | 1750. | 1727. | 1716. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.72 | 12.70 | 12.68 | 12.67 | 12.66 |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SCOM | .02 | 1 | FLOW | 43. | 43. | 42. | 41. | 41. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBCOM | .02 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 5.83 | 5.83 | 5.83 | 5.83 | 5.83 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.57 | 12.54 | 12.50 | 12.47 | 12.45 |
| | | | | TIME | 6.08 | 6.08 | 6.08 | 6.08 | 6.08 |
| 4 COMBINED AT | | | | | | | | | |
| + | C24 | 2.09 | 1 | FLOW | 1833. | 1810. | 1786. | 1763. | 1751. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV1L | 2.09 | 1 | FLOW | 1105. | 1090. | 1074. | 1059. | 1051. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV1R | 2.09 | 1 | FLOW | 728. | 720. | 712. | 705. | 701. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET1L | .00 | 1 | FLOW | 1105. | 1090. | 1074. | 1059. | 1051. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| DIVERSION TO | | | | | | | | | |
| + | DIV2L | .00 | 1 | FLOW | 512. | 507. | 501. | 495. | 492. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| HYDROGRAPH AT | | | | | | | | | |
| + | DIV2R | .00 | 1 | FLOW | 593. | 583. | 573. | 563. | 559. |
| | | | | TIME | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |

```
 2 COMBINED AT
+                C25      2.09    1   FLOW        1321.    1303.    1286.    1268.    1259.
                                     TIME         4.00     4.00     4.00     4.00     4.00

 ROUTED TO
+                R25      2.09    1   FLOW        1309.    1291.    1274.    1257.    1248.
                                     TIME         4.08     4.08     4.08     4.08     4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.28    12.26    12.24    12.22    12.21
                                     TIME         4.08     4.08     4.08     4.08     4.08

 HYDROGRAPH AT
+                S8       .03     1   FLOW          89.      88.      87.      86.      85.
                                     TIME         3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+                S10      .37     1   FLOW         730.     721.     711.     701.     696.
                                     TIME         3.33     3.33     3.33     3.33     3.33

 HYDROGRAPH AT
+                S12      .03     1   FLOW          95.      94.      92.      91.      90.
                                     TIME         3.17     3.17     3.17     3.17     3.17

 HYDROGRAPH AT
+               SGC1      .01     1   FLOW          20.      20.      19.      19.      19.
                                     TIME         3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+              RBGC1      .01     1   FLOW           1.       1.       1.       1.       1.
                                     TIME         4.58     4.58     4.58     4.58     4.58

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       12.65    12.59    12.53    12.48    12.45
                                     TIME         4.67     4.67     4.67     4.67     4.67

 5 COMBINED AT
+                C13      2.54    1   FLOW        1431.    1412.    1393.    1375.    1365.
                                     TIME         4.00     4.00     4.00     4.00     4.00

 DIVERSION TO
+              DIV3L      2.54    1   FLOW         169.     161.     154.     147.     143.
                                     TIME         4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+              DIV3R      2.54    1   FLOW        1262.    1251.    1239.    1228.    1222.
                                     TIME         4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+              RET3L       .00    1   FLOW         169.     161.     154.     147.     143.
                                     TIME         4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                SQ       .01     1   FLOW          27.      27.      27.      26.      26.
                                     TIME         3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+               RBQ       .01     1   FLOW           3.       3.       3.       2.       2.
                                     TIME         4.33     4.33     4.42     4.50     4.50

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE       13.02    13.01    13.01    13.01    13.01
                                     TIME         4.33     4.33     4.42     4.50     4.50

 2 COMBINED AT
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+                C1B      .01    1   FLOW        171.     163.     156.     148.     145.
                                     TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+               RET2L     .00    1   FLOW        512.     507.     501.     495.     492.
                                     TIME        4.00     4.00     4.00     4.00     4.00

 HYDROGRAPH AT
+                ST2      .03    1   FLOW         42.      42.      41.      40.      40.
                                     TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+               RBT2      .03    1   FLOW          8.       8.       7.       7.       7.
                                     TIME        4.08     4.17     4.17     4.17     4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      13.07    13.06    13.06    13.05    13.05
                                     TIME        4.08     4.17     4.17     4.17     4.17

 HYDROGRAPH AT
+                SS1      .02    1   FLOW         28.      27.      27.      27.      26.
                                     TIME        3.33     3.33     3.33     3.42     3.42

 ROUTED TO
+               RBS1      .02    1   FLOW          5.       5.       5.       4.       4.
                                     TIME        4.08     4.17     4.17     4.17     4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      13.04    13.03    13.03    13.03    13.03
                                     TIME        4.08     4.17     4.17     4.17     4.17

  3 COMBINED AT
+                C2L      .05    1   FLOW        525.     519.     512.     506.     502.
                                     TIME        4.00     4.00     4.00     4.00     4.00

 ROUTED TO
+                R2L      .05    1   FLOW        516.     510.     504.     497.     494.
                                     TIME        4.17     4.17     4.17     4.17     4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      12.50    12.48    12.47    12.45    12.44
                                     TIME        4.17     4.17     4.17     4.17     4.17

 HYDROGRAPH AT
+                SR1      .02    1   FLOW         30.      30.      30.      29.      29.
                                     TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+               RBR1      .02    1   FLOW          5.       5.       5.       4.       4.
                                     TIME        4.17     4.17     4.25     4.25     4.25

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      13.04    13.03    13.03    13.03    13.03
                                     TIME        4.17     4.17     4.25     4.25     4.25

 HYDROGRAPH AT
+                SP1      .02    1   FLOW         26.      26.      26.      25.      25.
                                     TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+               RBP1      .02    1   FLOW          4.       4.       4.       4.       3.
                                     TIME        4.17     4.25     4.25     4.25     4.33

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE      13.03    13.02    13.02    13.02    13.02
                                     TIME        4.17     4.25     4.25     4.25     4.33
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HYDROGRAPH AT
+                    SM1       .02     1   FLOW          29.      28.      28.      28.      27.
                                           TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                    RBM1      .02     1   FLOW           5.       4.       4.       4.       4.
                                           TIME        4.17     4.17     4.25     4.25     4.25

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE       13.03    13.03    13.03    13.02    13.02
                                           TIME        4.17     4.17     4.25     4.25     4.25

 4 COMBINED AT
+                    C26       .11     1   FLOW         530.     523.     516.     509.     505.
                                           TIME        4.17     4.17     4.17     4.17     4.17

 2 COMBINED AT
+                    NULL      .12     1   FLOW         693.     678.     664.     649.     642.
                                           TIME        4.08     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+                    S30       .42     1   FLOW         651.     643.     635.     627.     623.
                                           TIME        3.50     3.50     3.50     3.50     3.50

ROUTED TO
+                    R30       .42     1   FLOW         621.     614.     608.     601.     597.
                                           TIME        3.58     3.58     3.58     3.58     3.58

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE       12.69    12.68    12.66    12.65    12.65
                                           TIME        3.58     3.58     3.58     3.58     3.58

HYDROGRAPH AT
+                    SA1       .03     1   FLOW          44.      43.      43.      42.      42.
                                           TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                    RBA1      .03     1   FLOW           7.       6.       6.       6.       6.
                                           TIME        4.17     4.17     4.17     4.25     4.25

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE       13.05    13.05    13.05    13.04    13.04
                                           TIME        4.17     4.17     4.17     4.25     4.25

 2 COMBINED AT
+                    C32       .45     1   FLOW         623.     616.     609.     602.     598.
                                           TIME        3.58     3.58     3.58     3.58     3.58

HYDROGRAPH AT
+                    S40      1.60     1   FLOW        1137.    1120.    1103.    1087.    1078.
                                           TIME        4.08     4.08     4.08     4.08     4.08

ROUTED TO
+                    R48      1.60     1   FLOW        1079.    1062.    1045.    1029.    1020.
                                           TIME        4.42     4.42     4.42     4.42     4.42

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE       13.57    13.55    13.54    13.52    13.51
                                           TIME        4.42     4.42     4.42     4.42     4.42

HYDROGRAPH AT
+                    S50       .53     1   FLOW         693.     685.     676.     667.     662.
                                           TIME        3.58     3.58     3.58     3.58     3.58

 2 COMBINED AT
```

```
+                    C51      2.13    1   FLOW        1315.    1293.    1271.    1249.    1238.
                                         TIME         4.25     4.25     4.25     4.25     4.25

 HYDROGRAPH AT
+                    SJ1       .03    1   FLOW          49.      48.      48.      47.      47.
                                         TIME         3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                   RBJ1       .03    1   FLOW           6.       6.       5.       5.       5.
                                         TIME         4.25     4.25     4.33     4.33     4.42

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       13.05    13.04    13.04    13.04    13.03
                                         TIME         4.25     4.25     4.33     4.33     4.42

  2 COMBINED AT
+                    C52      2.16    1   FLOW        1321.    1299.    1276.    1254.    1243.
                                         TIME         4.25     4.25     4.25     4.25     4.25

 ROUTED TO
+                    R51      2.16    1   FLOW        1312.    1290.    1268.    1247.    1236.
                                         TIME         4.33     4.33     4.33     4.33     4.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       13.68    13.65    13.63    13.61    13.59
                                         TIME         4.33     4.33     4.33     4.33     4.33

 HYDROGRAPH AT
+                   SGC6       .02    1   FLOW          29.      29.      28.      28.      27.
                                         TIME         3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBGC6       .02    1   FLOW           3.       3.       3.       2.       2.
                                         TIME         4.25     4.33     4.33     4.42     4.42

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       13.02    13.01    13.01    13.01    13.01
                                         TIME         4.25     4.33     4.33     4.42     4.42

 HYDROGRAPH AT
+                    ST1       .03    1   FLOW          42.      42.      41.      40.      40.
                                         TIME         3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                   RBT1       .03    1   FLOW           8.       8.       7.       7.       7.
                                         TIME         4.08     4.17     4.17     4.17     4.17

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       13.07    13.06    13.06    13.05    13.05
                                         TIME         4.08     4.17     4.17     4.17     4.17

  4 COMBINED AT
+                    C54      2.65    1   FLOW        1641.    1620.    1598.    1577.    1567.
                                         TIME         3.75     3.75     3.75     3.75     3.75

 ROUTED TO
+                    R54      2.65    1   FLOW        1606.    1585.    1563.    1542.    1531.
                                         TIME         3.92     3.92     3.92     3.92     3.92

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE       12.61    12.59    12.57    12.55    12.54
                                         TIME         3.92     3.92     3.92     3.92     3.92

 HYDROGRAPH AT
+                    SU1       .05    1   FLOW          69.      68.      67.      66.      65.
                                         TIME         3.42     3.42     3.42     3.42     3.42
```

```
ROUTED TO
+                RBU1      .05    1   FLOW        12.     11.     11.     10.     10.
                                      TIME      4.17    4.25    4.25    4.25    4.25

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     13.11   13.10   13.09   13.09   13.08
                                      TIME      4.17    4.25    4.25    4.25    4.25

HYDROGRAPH AT
+                 SL1      .03    1   FLOW        43.     43.     42.     41.     41.
                                      TIME      3.42    3.42    3.42    3.42    3.42

ROUTED TO
+                RBL1      .03    1   FLOW         8.      7.      7.      6.      6.
                                      TIME      4.17    4.17    4.17    4.25    4.25

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     13.06   13.06   13.05   13.05   13.05
                                      TIME      4.17    4.17    4.17    4.25    4.25

HYDROGRAPH AT
+                 SN2      .01    1   FLOW        14.     13.     13.     13.     13.
                                      TIME      3.33    3.33    3.33    3.33    3.33

ROUTED TO
+                RBN2      .01    1   FLOW         1.      1.      1.      1.      1.
                                      TIME      4.25    4.25    4.25    4.25    4.25

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.64   12.59   12.53   12.47   12.44
                                      TIME      4.25    4.25    4.25    4.25    4.25

 4 COMBINED AT
+                 C56     2.73    1   FLOW      1622.   1599.   1576.   1552.   1540.
                                      TIME      3.92    3.92    3.92    3.92    3.92

HYDROGRAPH AT
+                SGC3      .02    1   FLOW        24.     24.     24.     23.     23.
                                      TIME      3.50    3.50    3.50    3.50    3.50

ROUTED TO
+               RBGC3      .02    1   FLOW         1.      1.      1.      1.      1.
                                      TIME      5.67    5.67    5.67    5.67    5.67

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.68   12.61   12.55   12.49   12.46
                                      TIME      5.92    5.92    5.92    5.92    5.92

 3 COMBINED AT
+                NULL     2.87    1   FLOW      2286.   2249.   2212.   2176.   2157.
                                      TIME      4.00    3.92    3.92    3.92    3.92

HYDROGRAPH AT
+                 S60     1.81    1   FLOW      1489.   1468.   1448.   1428.   1418.
                                      TIME      4.00    4.00    4.08    4.08    4.08

DIVERSION TO
+               DIV4L     1.81    1   FLOW       714.    701.    689.    676.    670.
                                      TIME      4.00    4.00    4.08    4.08    4.08

HYDROGRAPH AT
+               DIV4R     1.81    1   FLOW       775.    767.    759.    751.    747.
                                      TIME      4.00    4.00    4.08    4.08    4.08

HYDROGRAPH AT
```

```
+                    S70       .03    1   FLOW        86.     85.     84.     83.     82.
                                          TIME      3.17    3.17    3.17    3.17    3.17

 HYDROGRAPH AT
+                    S13       .01    1   FLOW        25.     24.     24.     24.     23.
                                          TIME      3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                   RB13       .01    1   FLOW         3.      3.      2.      2.      2.
                                          TIME      4.25    4.33    4.33    4.42    4.42

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     13.01   13.01   13.01   13.01   13.01
                                          TIME      4.25    4.33    4.33    4.42    4.42

  3 COMBINED AT
+                    C70      1.85    1   FLOW       783.    775.    766.    758.    754.
                                          TIME      4.00    4.00    4.00    4.00    4.00

 ROUTED TO
+                    R70      1.85    1   FLOW       777.    769.    760.    751.    747.
                                          TIME      4.17    4.17    4.17    4.17    4.17

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.96   12.95   12.94   12.93   12.92
                                          TIME      4.17    4.17    4.17    4.17    4.17

 HYDROGRAPH AT
+                    SB1       .03    1   FLOW        53.     52.     51.     51.     50.
                                          TIME      3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                   RBB1       .03    1   FLOW         7.      7.      6.      6.      6.
                                          TIME      4.25    4.25    4.33    4.33    4.42

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     13.06   13.05   13.05   13.04   13.04
                                          TIME      4.25    4.25    4.33    4.33    4.42

 HYDROGRAPH AT
+                   SGC4       .03    1   FLOW        55.     54.     53.     52.     52.
                                          TIME      3.33    3.33    3.33    3.33    3.33

 ROUTED TO
+                  RBGC4       .03    1   FLOW         7.      6.      6.      5.      5.
                                          TIME      4.17    4.17    4.25    4.25    4.33

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     13.05   13.05   13.04   13.04   13.04
                                          TIME      4.17    4.17    4.25    4.25    4.33

  3 COMBINED AT
+                    C71      1.91    1   FLOW       791.    781.    772.    762.    757.
                                          TIME      4.17    4.17    4.17    4.17    4.17

 ROUTED TO
+                    R71      1.91    1   FLOW       775.    765.    754.    743.    738.
                                          TIME      4.33    4.33    4.33    4.42    4.42

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE     12.96   12.95   12.93   12.92   12.91
                                          TIME      4.33    4.33    4.33    4.42    4.42

 HYDROGRAPH AT
+                    SN1       .06    1   FLOW       116.    114.    113.    111.    111.
                                          TIME      3.33    3.33    3.33    3.33    3.33
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ROUTED TO
+                RBN1      .06    1   FLOW        18.      17.      16.      14.      14.
                                      TIME      4.08     4.08     4.08     4.17     4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     13.16    13.15    13.14    13.13    13.12
                                      TIME      4.08     4.08     4.08     4.17     4.17

 2 COMBINED AT
+                 C62     1.97    1   FLOW       790.     779.     768.     756.     750.
                                      TIME      4.33     4.33     4.33     4.33     4.42

 2 COMBINED AT
+                NULL     4.85    1   FLOW      2965.    2911.    2858.    2806.    2782.
                                      TIME      4.17     4.17     4.17     4.25     4.25

HYDROGRAPH AT
+               RET4L      .00    1   FLOW       714.     701.     689.     676.     670.
                                      TIME      4.00     4.00     4.08     4.08     4.08

DIVERSION TO
+               DIV5L      .00    1   FLOW       353.     347.     341.     335.     332.
                                      TIME      4.00     4.00     4.08     4.08     4.08

HYDROGRAPH AT
+               DIV5R      .00    1   FLOW       361.     355.     348.     342.     339.
                                      TIME      4.00     4.00     4.08     4.08     4.08

ROUTED TO
+                 R5R      .00    1   FLOW       357.     351.     345.     338.     335.
                                      TIME      4.08     4.08     4.08     4.08     4.08

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.62    12.61    12.58    12.55    12.54
                                      TIME      4.08     4.08     4.08     4.08     4.08

HYDROGRAPH AT
+                 SC1      .03    1   FLOW        37.      36.      36.      35.      35.
                                      TIME      3.33     3.33     3.33     3.42     3.42

ROUTED TO
+                RBC1      .03    1   FLOW         1.       1.       1.       1.       1.
                                      TIME      6.17     6.17     6.17     6.17     6.00

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     12.47    12.41    12.36    12.31    12.29
                                      TIME      6.17     6.17     6.17     6.17     6.17

HYDROGRAPH AT
+                 SD1      .02    1   FLOW        38.      37.      37.      36.      36.
                                      TIME      3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                RBD1      .02    1   FLOW         6.       6.       5.       5.       5.
                                      TIME      4.08     4.08     4.08     4.17     4.17

                                 ** PEAK STAGES IN FEET **
                                 1   STAGE     13.05    13.04    13.04    13.04    13.04
                                      TIME      4.08     4.08     4.17     4.17     4.17

 3 COMBINED AT
+                 C66      .05    1   FLOW       364.     358.     351.     345.     341.
                                      TIME      4.08     4.08     4.08     4.08     4.08

 2 COMBINED AT
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| + | NULL | 4.90 | 1 | FLOW | 3329. | 3268. | 3208. | 3149. | 3119. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | RET5L | .00 | 1 | FLOW | 353. | 347. | 341. | 335. | 332. |
| | | | | TIME | 4.00 | 4.00 | 4.08 | 4.08 | 4.08 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI2 | .01 | 1 | FLOW | 22. | 22. | 22. | 21. | 21. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.67 | 12.62 | 12.57 | 12.51 | 12.49 |
| | | | | TIME | 5.08 | 5.08 | 5.08 | 5.08 | 5.08 |
| 2 COMBINED AT | | | | | | | | | |
| + | C5L | .01 | 1 | FLOW | 354. | 348. | 342. | 336. | 333. |
| | | | | TIME | 4.00 | 4.00 | 4.08 | 4.08 | 4.08 |
| ROUTED TO | | | | | | | | | |
| + | R5L | .01 | 1 | FLOW | 349. | 343. | 337. | 331. | 328. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.17 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.60 | 12.57 | 12.55 | 12.53 | 12.51 |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SE2 | .01 | 1 | FLOW | 16. | 15. | 15. | 15. | 15. |
| | | | | TIME | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| ROUTED TO | | | | | | | | | |
| + | RBE2 | .01 | 1 | FLOW | 1. | 1. | 1. | 1. | 1. |
| | | | | TIME | 4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| | | | ** PEAK STAGES IN FEET ** | | | | | | |
| | | | 1 | STAGE | 12.81 | 12.75 | 12.70 | 12.64 | 12.61 |
| | | | | TIME | 4.58 | 4.58 | 4.58 | 4.58 | 4.58 |
| 2 COMBINED AT | | | | | | | | | |
| + | C68 | .02 | 1 | FLOW | 350. | 344. | 338. | 333. | 330. |
| | | | | TIME | 4.17 | 4.08 | 4.08 | 4.08 | 4.17 |
| 2 COMBINED AT | | | | | | | | | |
| + | NULL | 4.92 | 1 | FLOW | 3679. | 3612. | 3547. | 3481. | 3449. |
| | | | | TIME | 4.17 | 4.17 | 4.17 | 4.17 | 4.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S80 | .06 | 1 | FLOW | 121. | 119. | 117. | 116. | 115. |
| | | | | TIME | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| HYDROGRAPH AT | | | | | | | | | |
| + | S90 | .06 | 1 | FLOW | 139. | 137. | 135. | 133. | 132. |
| | | | | TIME | 3.17 | 3.17 | 3.17 | 3.17 | 3.17 |
| HYDROGRAPH AT | | | | | | | | | |
| + | SI1 | .01 | 1 | FLOW | 27. | 27. | 27. | 26. | 26. |
| | | | | TIME | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |
| ROUTED TO | | | | | | | | | |
| + | RBI1 | .01 | 1 | FLOW | 3. | 3. | 3. | 2. | 2. |
| | | | | TIME | 4.33 | 4.33 | 4.42 | 4.50 | 4.50 |

```
                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.02    13.01    13.01    13.01    13.01
                                      TIME        4.33     4.33     4.42     4.50     4.50

 3 COMBINED AT
+                 C90       .14    1   FLOW       260.     256.     253.     249.     247.
                                      TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                 R90       .14    1   FLOW       243.     239.     236.     232.     230.
                                      TIME        3.33     3.33     3.33     3.33     3.33

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.13    12.11    12.09    12.07    12.07
                                      TIME        3.33     3.33     3.33     3.33     3.33

HYDROGRAPH AT
+                 S94       .13    1   FLOW       276.     272.     268.     264.     262.
                                      TIME        3.25     3.25     3.25     3.25     3.25

HYDROGRAPH AT
+                 S100      .15    1   FLOW       301.     296.     292.     287.     285.
                                      TIME        3.25     3.25     3.25     3.25     3.25

HYDROGRAPH AT
+                 SH1       .03    1   FLOW        51.      51.      50.      49.      49.
                                      TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                 RBH1      .03    1   FLOW         7.       6.       6.       5.       5.
                                      TIME        4.25     4.33     4.33     4.42     4.42

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.05    13.05    13.04    13.04    13.04
                                      TIME        4.25     4.33     4.33     4.42     4.42

 3 COMBINED AT
+                 C100      .31    1   FLOW       578.     569.     561.     552.     548.
                                      TIME        3.25     3.25     3.25     3.25     3.25

ROUTED TO
+                 R100      .31    1   FLOW       497.     490.     481.     474.     470.
                                      TIME        3.42     3.42     3.42     3.42     3.42

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      12.92    12.90    12.89    12.87    12.87
                                      TIME        3.42     3.42     3.42     3.42     3.42

HYDROGRAPH AT
+                 SE1       .04    1   FLOW        71.      70.      69.      68.      68.
                                      TIME        3.33     3.33     3.33     3.33     3.33

ROUTED TO
+                 RBE1      .04    1   FLOW        10.       9.       8.       8.       7.
                                      TIME        4.17     4.25     4.25     4.25     4.33

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.08    13.07    13.06    13.06    13.06
                                      TIME        4.17     4.25     4.25     4.25     4.33

HYDROGRAPH AT
+                 SGC5      .03    1   FLOW        41.      40.      39.      39.      38.
                                      TIME        3.42     3.42     3.42     3.42     3.42

ROUTED TO
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```
+                RBGC5      .03    1   FLOW          5.      5.      4.      4.      4.
                                      TIME        4.50    4.58    4.58    4.67    4.75

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      13.04   13.03   13.03   13.02   13.02
                                       TIME        4.50    4.58    4.58    4.67    4.75

  4 COMBINED AT
+                C103       .51    1   FLOW        730.    719.    708.    697.    691.
                                      TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                SGC2       .02    1   FLOW         33.     33.     32.     32.     31.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBGC2      .02    1   FLOW          4.      4.      4.      3.      3.
                                      TIME        4.50    4.50    4.58    4.67    4.67

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      13.03   13.03   13.02   13.02   13.02
                                       TIME        4.50    4.50    4.58    4.67    4.67

 HYDROGRAPH AT
+                SO1        .01    1   FLOW         22.     22.     22.     22.     21.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBO1       .01    1   FLOW          3.      2.      2.      2.      2.
                                      TIME        4.42    4.42    4.50    4.58    4.67

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      13.01   13.01   13.01   13.00   13.00
                                       TIME        4.42    4.42    4.50    4.58    4.67

  2 COMBINED AT
+                CO         .04    1   FLOW          7.      6.      6.      5.      5.
                                      TIME        4.42    4.50    4.58    4.67    4.67

 HYDROGRAPH AT
+                SM2        .03    1   FLOW         43.     42.     42.     41.     41.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBM2       .03    1   FLOW          8.      7.      7.      6.      6.
                                      TIME        4.17    4.17    4.17    4.25    4.25

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE      13.06   13.06   13.05   13.05   13.05
                                       TIME        4.17    4.17    4.17    4.25    4.25

  2 COMBINED AT
+                C28        .07    1   FLOW         14.     13.     12.     11.     11.
                                      TIME        4.33    4.33    4.42    4.42    4.50

  2 COMBINED AT
+                NULL       .58    1   FLOW        733.    721.    710.    699.    693.
                                      TIME        3.33    3.33    3.33    3.33    3.33

 HYDROGRAPH AT
+                SK1        .03    1   FLOW         46.     45.     44.     44.     44.
                                      TIME        3.42    3.42    3.42    3.42    3.42

 ROUTED TO
+                RBK1       .03    1   FLOW          6.      6.      5.      5.      5.
                                      TIME        4.25    4.33    4.33    4.42    4.42
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                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.05    13.04    13.04    13.03    13.03
                                      TIME        4.25     4.33     4.33     4.42     4.42

 HYDROGRAPH AT
+                  SF1      .02    1   FLOW         33.      33.      32.      32.      32.
                                      TIME        3.33     3.33     3.33     3.33     3.33

 ROUTED TO
+                  RBF1     .02    1   FLOW          4.       3.       3.       3.       3.
                                      TIME        4.33     4.33     4.42     4.50     4.50

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.02    13.02    13.02    13.01    13.01
                                      TIME        4.33     4.33     4.42     4.50     4.50

  2 COMBINED AT
+                  NULL     .04    1   FLOW         10.       9.       8.       8.       7.
                                      TIME        4.33     4.33     4.42     4.42     4.42

 HYDROGRAPH AT
+                  SG1      .03    1   FLOW         54.      54.      53.      52.      52.
                                      TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBG1     .03    1   FLOW          7.       7.       6.       6.       5.
                                      TIME        4.33     4.33     4.33     4.42     4.42

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.06    13.05    13.05    13.04    13.04
                                      TIME        4.33     4.33     4.33     4.42     4.42

 HYDROGRAPH AT
+                  SG2      .03    1   FLOW         54.      54.      53.      52.      52.
                                      TIME        3.42     3.42     3.42     3.42     3.42

 ROUTED TO
+                  RBG1     .03    1   FLOW          7.       7.       6.       6.       5.
                                      TIME        4.33     4.33     4.33     4.42     4.42

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE      13.06    13.05    13.05    13.04    13.04
                                      TIME        4.33     4.33     4.33     4.42     4.42

  2 COMBINED AT
+                  NULL     .06    1   FLOW         14.      13.      12.      11.      11.
                                      TIME        4.33     4.33     4.33     4.42     4.42


*** NORMAL END OF HEC-1 ***
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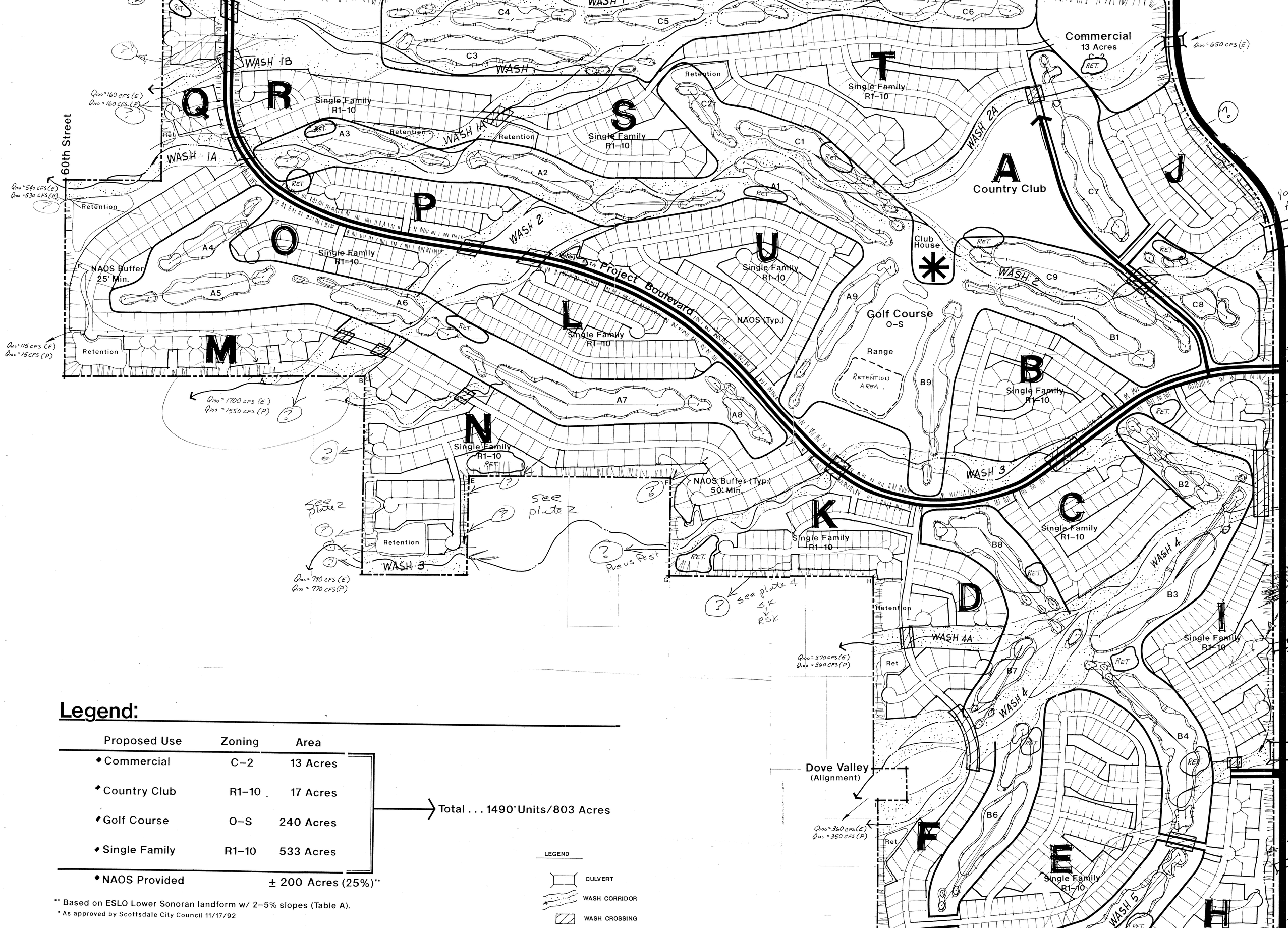



## Legend:

| Proposed Use | Zoning | Area |
|---|---|---|
| ◆ Commercial | C–2 | 13 Acres |
| ◆ Country Club | R1–10 | 17 Acres |
| ◆ Golf Course | O–S | 240 Acres |
| ◆ Single Family | R1–10 | 533 Acres |
| ◆ NAOS Provided | | ± 200 Acres (25%)** |

→ Total . . . 1490*Units/803 Acres

** Based on ESLO Lower Sonoran landform w/ 2–5% slopes (Table A).

* As approved by Scottsdale City Council 11/17/92

LEGEND

CULVERT

WASH CORRIDOR

WASH CROSSING

200' 0 200' 600'

NORTH

REVISED: 6-11-93

# MASTER DRAINAGE PLAN PLATE 3

# TERRAVITA

Scottsdale, Arizona

For:

Del Webb Corporation 2231 E. Camelback Road #400 Phoenix, AZ. 85016 602/468-6800

Consultants:

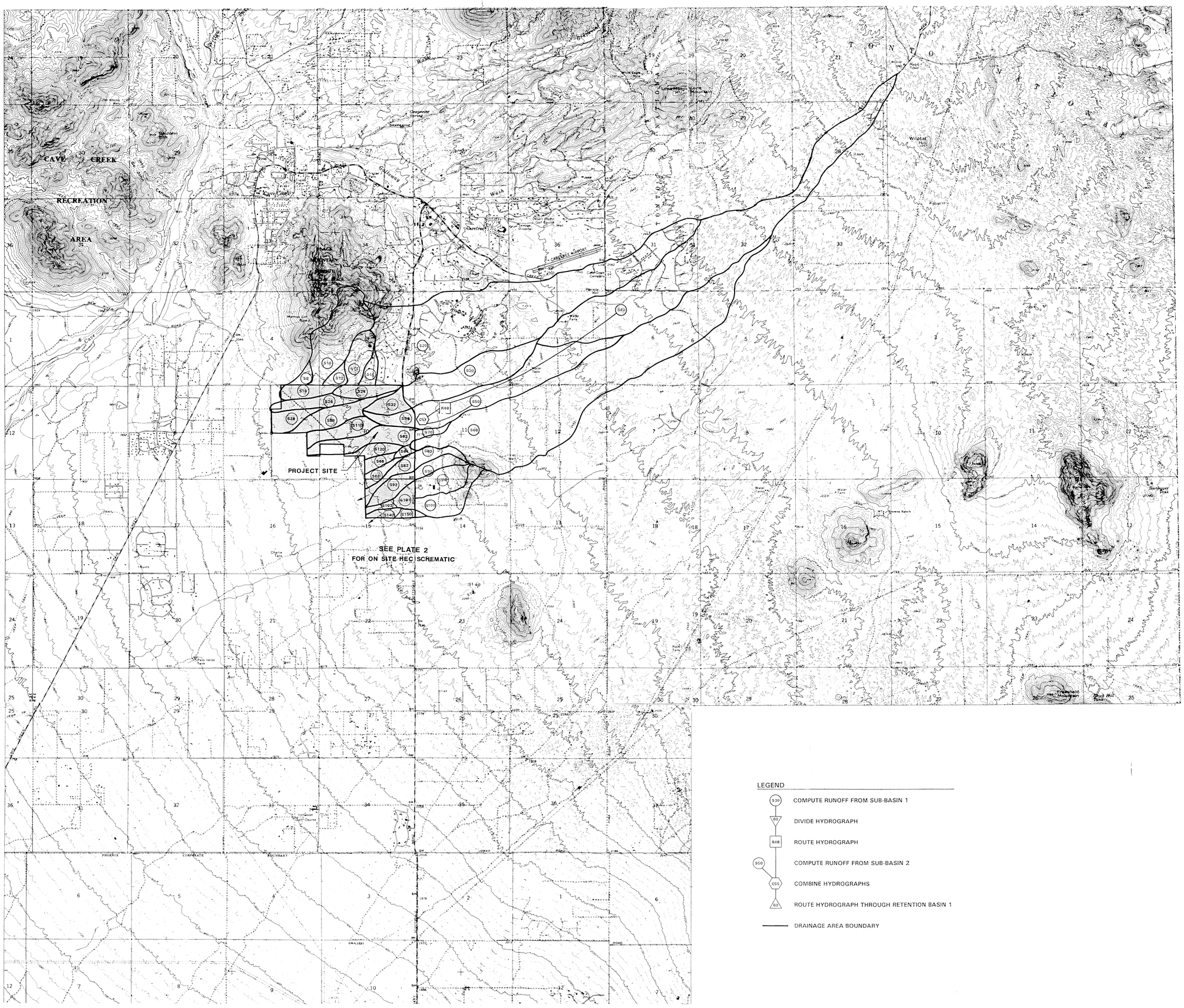
◆ Planning:
G. William Larson Associates, Inc.
Fountain Hills, AZ.
602/837-0837

◆ Legal:
Earl, Curley & Lagarde
Phoenix, AZ.

◆ Golf Design:
Casper/Nash
Phoenix, AZ.

◆ Civil Engineer:
Coe & Van Loo
Phoenix, AZ.

◆ Traffic Engineer:
Kirkham, Micheal and Assoociates
Phoenix, AZ.




LEGEND

- COMPUTE RUNOFF FROM SUB-BASIN 1
- DIVIDE HYDROGRAPH
- ROUTE HYDROGRAPH
- COMPUTE RUNOFF FROM SUB-BASIN 2
- COMBINE HYDROGRAPHS
- ROUTE HYDROGRAPH THROUGH RETENTION BASIN 1
- DRAINAGE AREA BOUNDARY

# TERRAVITA

OFFSITE

## WATERSHED BOUNDARY MAP

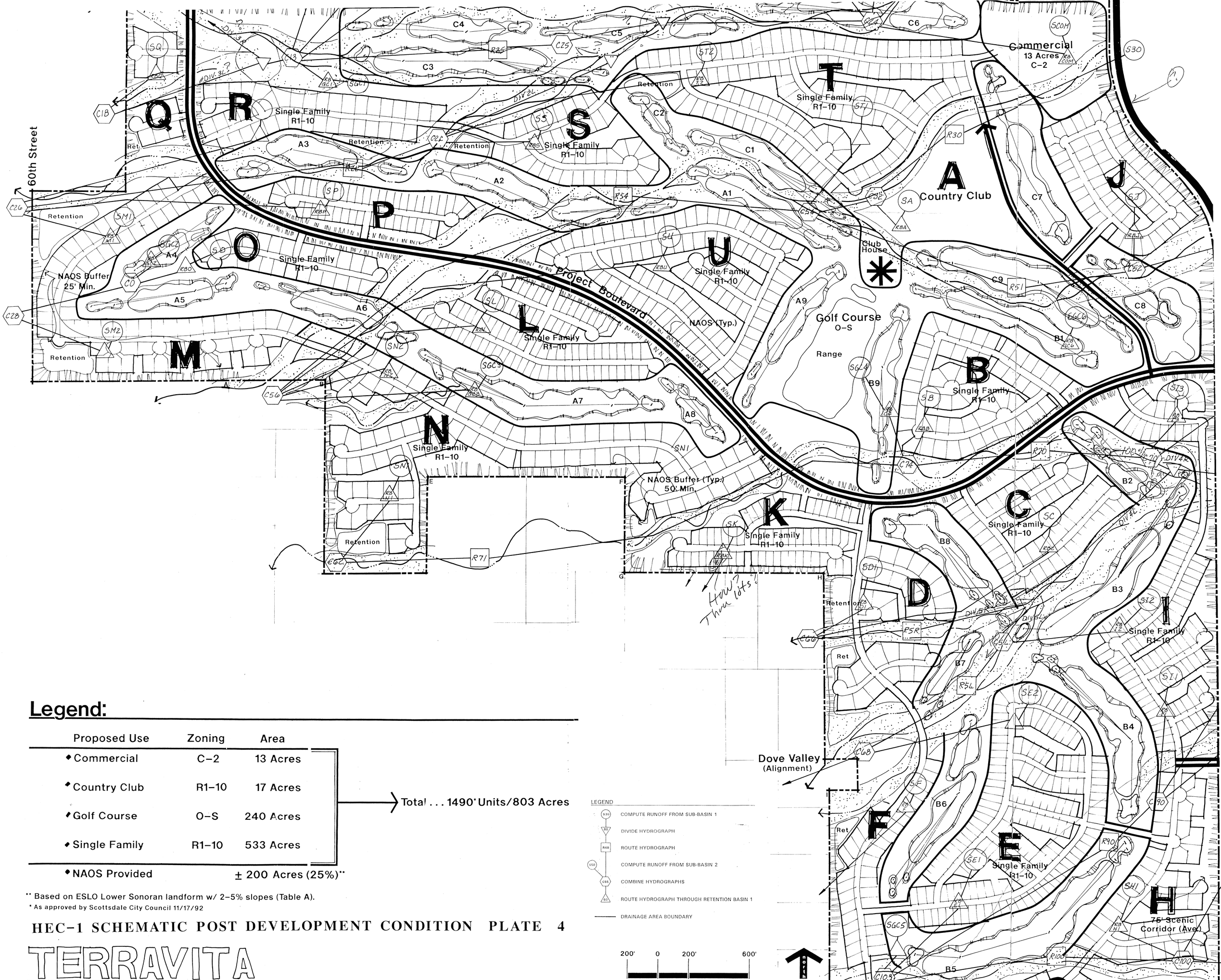
EXISTING CONDITIONS &
HEC-1 SCHEMATIC

**PLATE 1**

CVL
COE & VAN LOO
PLANNING · ENGINEERING
LANDSCAPE ARCHITECTURE

CVL #44-0001-01

REVISED 6-11-93




## Legend:

| Proposed Use | Zoning | Area |
|---|---|---|
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→ Total . . . 1490* Units/803 Acres

** Based on ESLO Lower Sonoran landform w/ 2–5% slopes (Table A).

* As approved by Scottsdale City Council 11/17/92

**HEC-1 SCHEMATIC POST DEVELOPMENT CONDITION PLATE 4**

# TERRAVITA

Scottsdale, Arizona

For:

Del Webb Corporation 2231 E. Camelback Road #400 Phoenix, AZ. 85016 602/468-6800

REVISED: 6-11-93

Consultants:

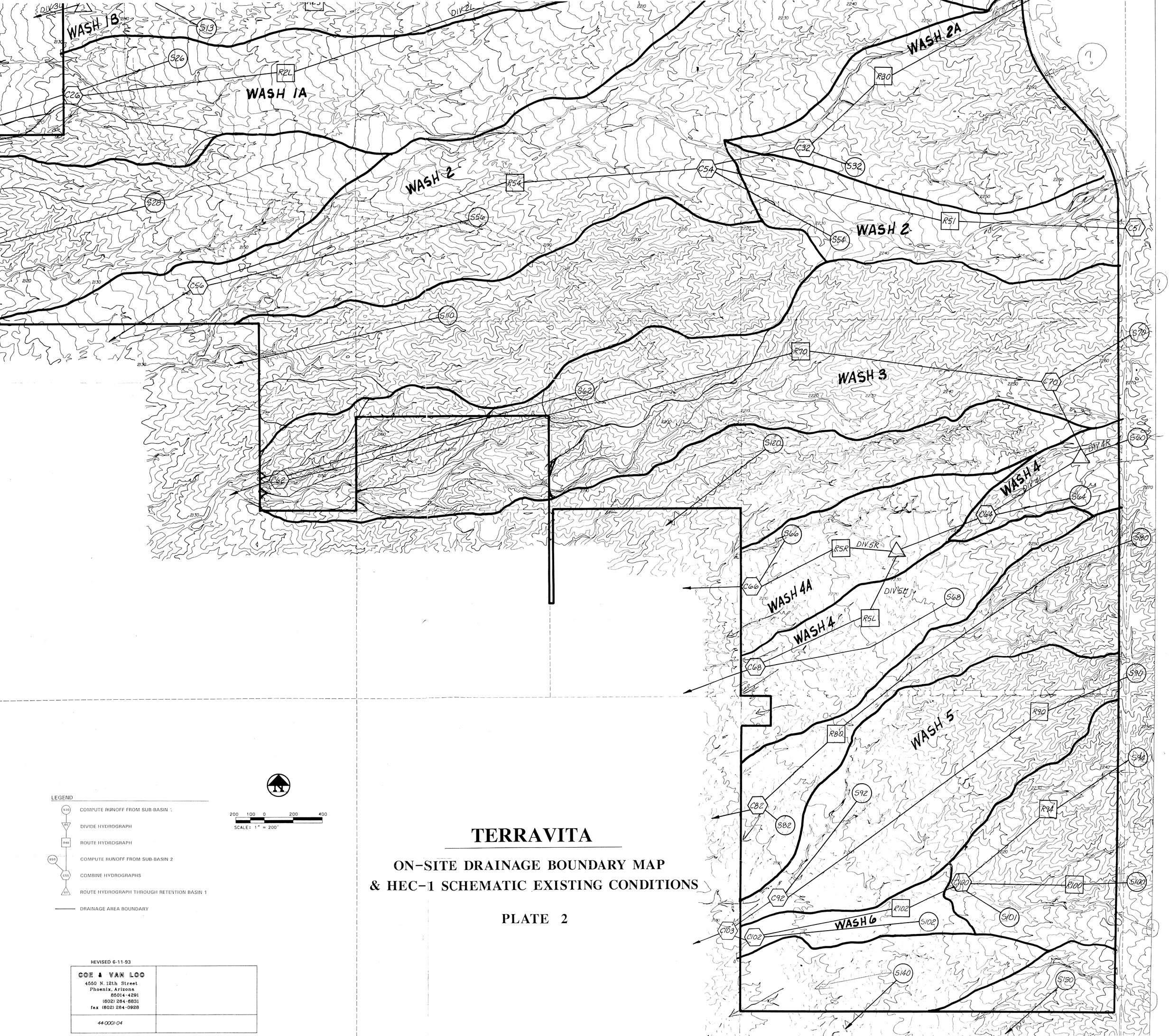
◆ Planning:

◆ Legal:

◆ Golf Design:

◆ Civil Engineer:

◆ Traffic Engineer:




LEGEND

- COMPUTE RUNOFF FROM SUB-BASIN 1
- DIVIDE HYDROGRAPH
- ROUTE HYDROGRAPH
- COMPUTE RUNOFF FROM SUB-BASIN 2
- COMBINE HYDROGRAPHS
- ROUTE HYDROGRAPH THROUGH RETENTION BASIN 1
- DRAINAGE AREA BOUNDARY

N

200 100 0 200 400

SCALE: 1" = 200'

# TERRAVITA

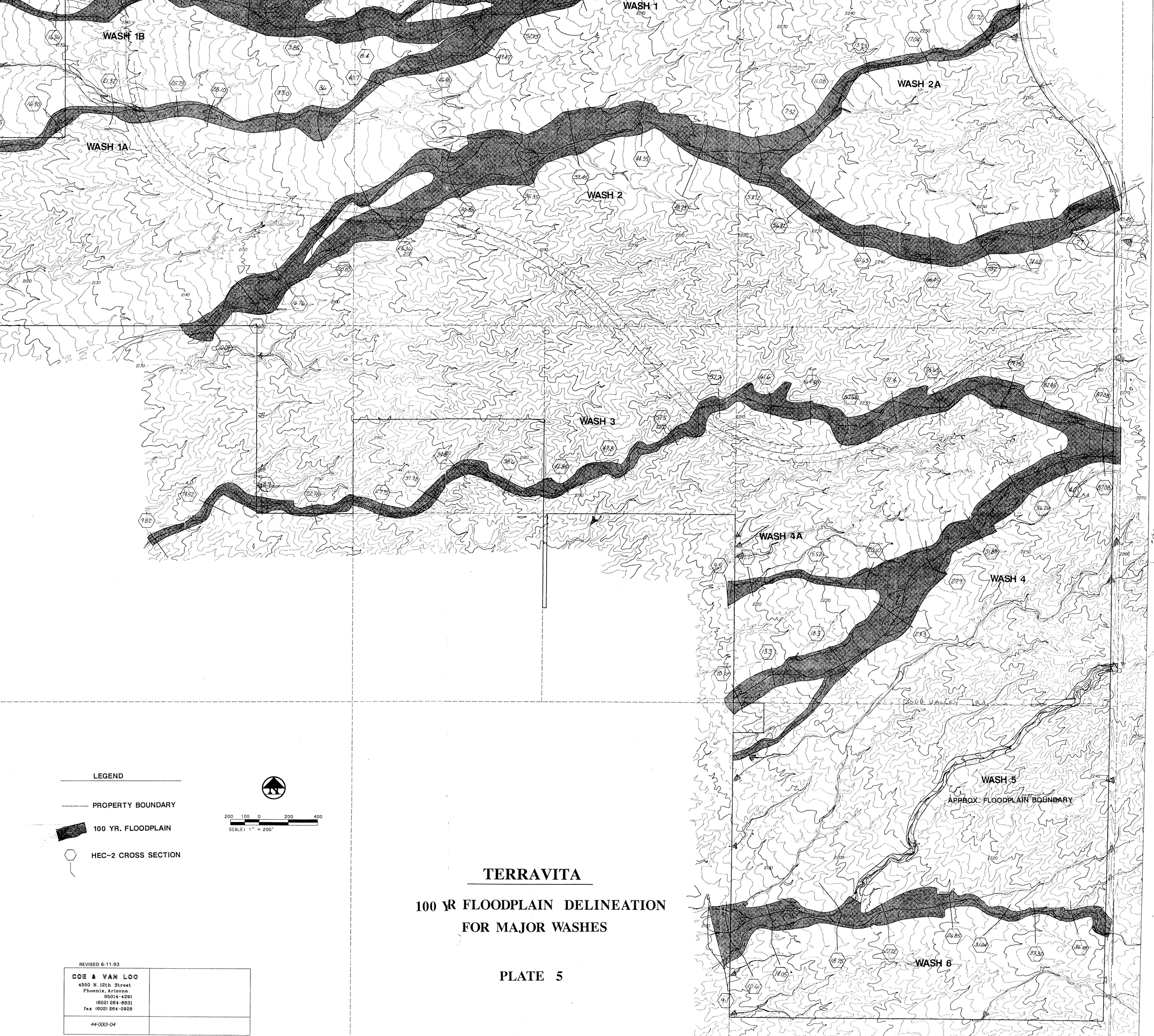
## ON-SITE DRAINAGE BOUNDARY MAP & HEC-1 SCHEMATIC EXISTING CONDITIONS

PLATE 2

REVISED 6-11-93


COE & VAN LOO
4550 N. 12th Street
Phoenix, Arizona
85014-4291
(602) 264-6831
fax (602) 264-0928


44-0001-04




# TERRAVITA

## 100 YR FLOODPLAIN DELINEATION FOR MAJOR WASHES

## PLATE 5

REVISED 6-11-93


COE & VAN LOO
4550 N. 12th Street
Phoenix, Arizona
85014-4291
(602) 264-6831
fax (602) 264-0928

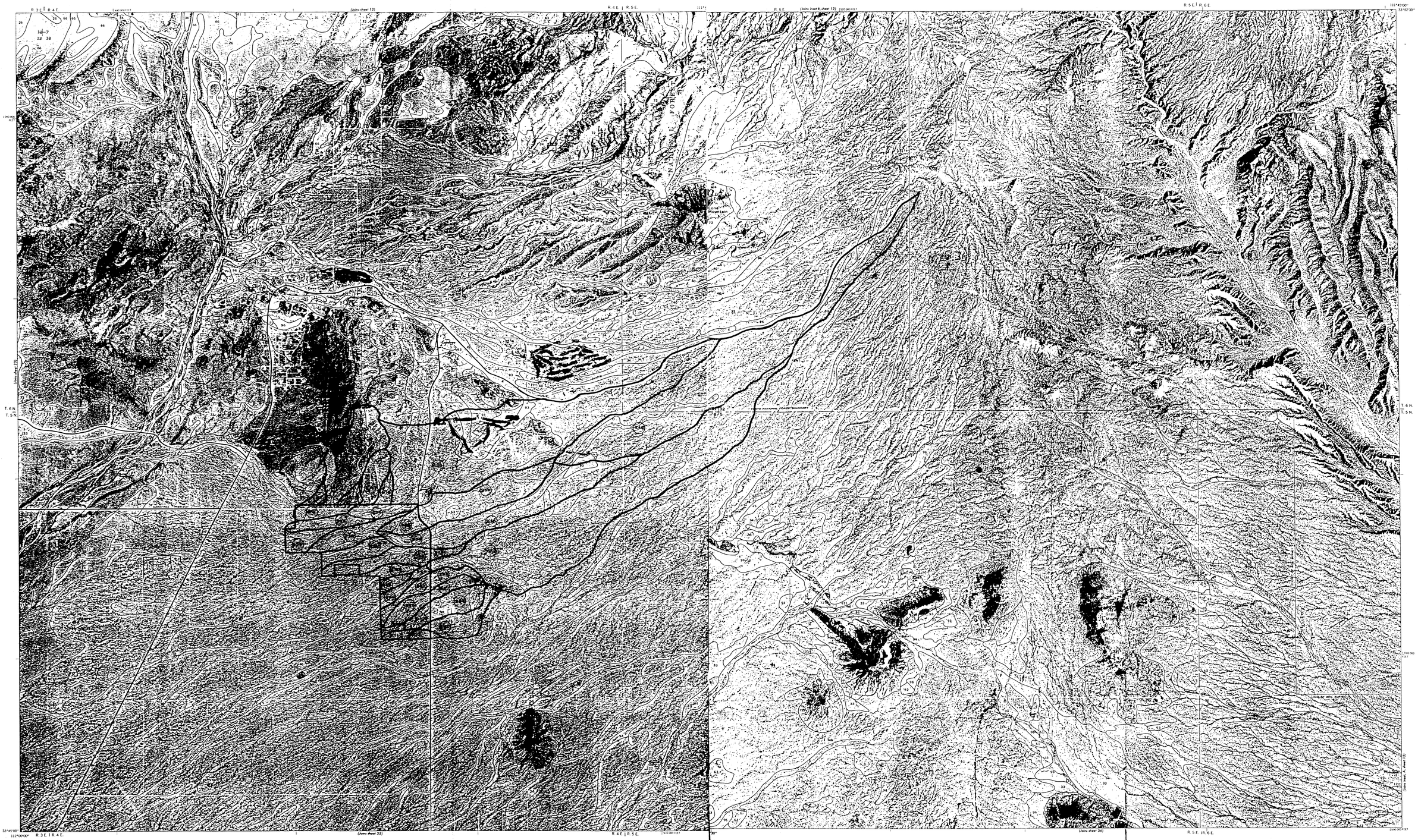

44-0001-04

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 24
AGUILA-CAREFREE AREA, PARTS OF
MARICOPA AND PINAL COUNTIES, ARIZONA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 25
AGUILA-CAREFREE AREA, PARTS OF
MARICOPA AND PINAL COUNTIES, ARIZONA




This soil survey was compiled in 1978 by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.

Scale 1:24 000

Orthophotobase compiled from 1972 and 1973 aerial photography by the U.S. Department of The Interior, Geological Survey. Planimetric detail obtained from 7½ minute series maps. 10,000-foot grid based on state coordinate system.

AGUILA — CAREFREE AREA, PARTS OF MARICOPA AND PINAL COUNTIES, ARIZONA NO. 24

SHEET NO. 24 OF 51

This soil survey was compiled in 1978 by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.

Scale 1:24 000

Orthophotobase compiled from 1972 and 1973 aerial photography by the U.S. Department of The Interior, Geological Survey. Planimetric detail obtained from 7½ minute series maps. 10,000-foot grid based on state coordinate system.

AGUILA — CAREFREE AREA, PARTS OF MARICOPA AND PINAL COUNTIES, ARIZONA NO. 25

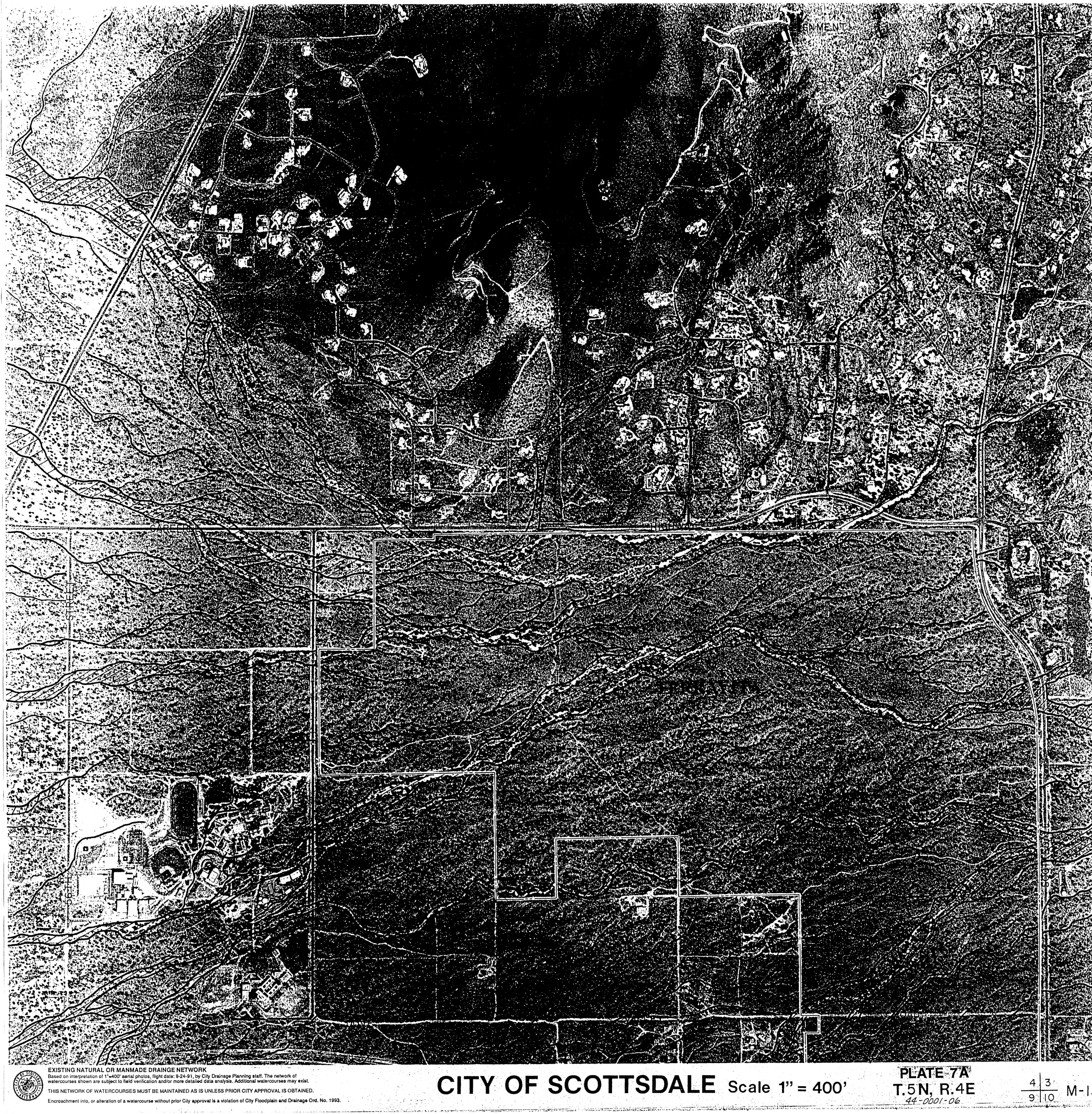
# TERRAVITA

## SOIL & WATERSHED BOUNDARY MAP

**PLATE 6**

**REVISED 6-11-93**

SHEET NO. 25 OF 51




EXISTING NATURAL OR MANMADE DRAINGE NETWORK

Based on interpretation of 1"=400' aerial photos, flight date: 9-24-91, by City Drainage Planning staff. The network of watercourses shown are subject to field verification and/or more detailed data analysis. Additional watercourses may exist.

THIS NETWORK OF WATERCOURSES MUST BE MAINTAINED AS IS UNLESS PRIOR CITY APPROVAL IS OBTAINED.

Encroachment into, or alteration of a watercourse without prior City approval is a violation of City Floodplain and Drainage Ord. No. 1993.

# CITY OF SCOTTSDALE Scale 1" = 400'

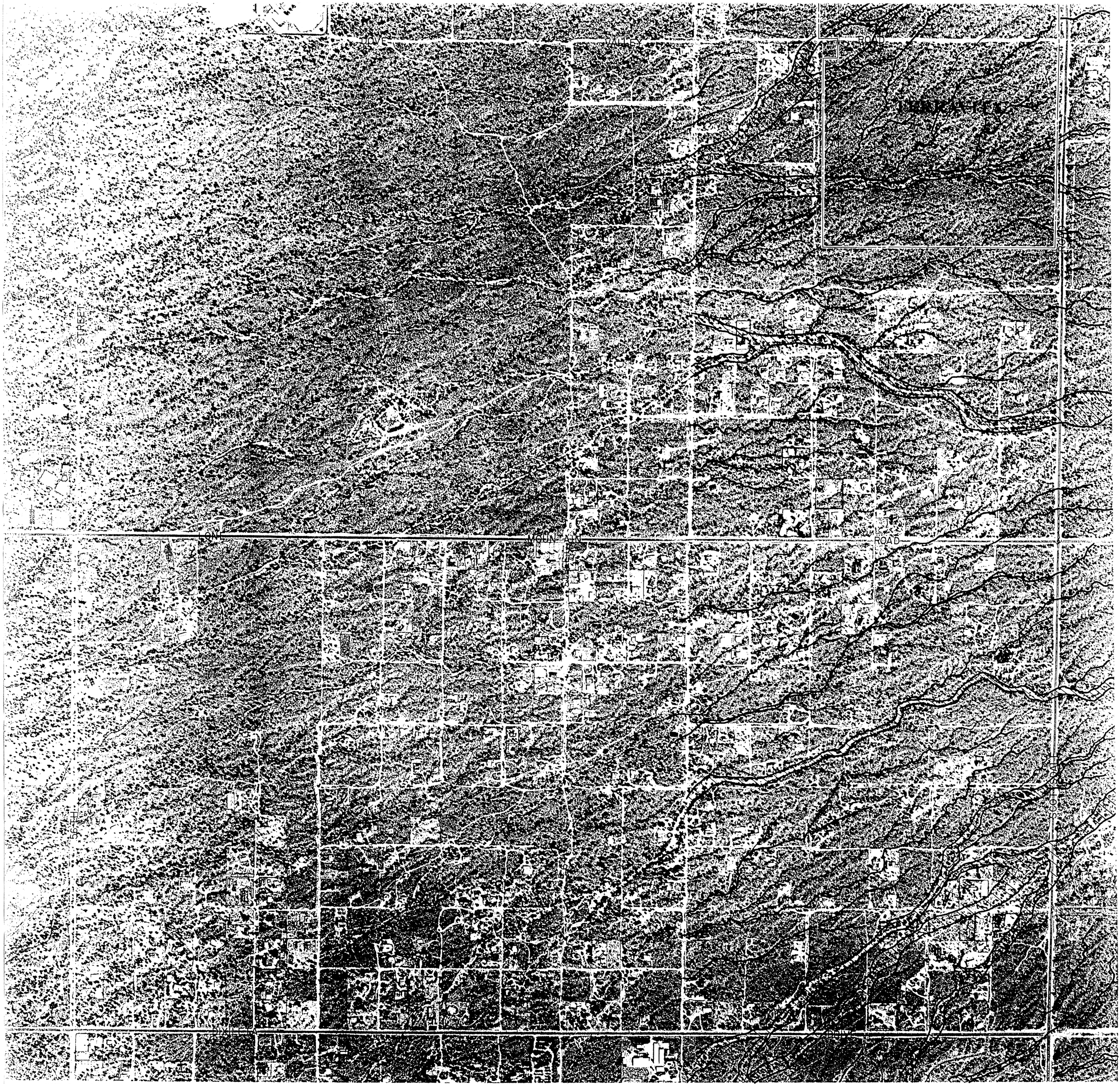
PLATE 7A

T.5N, R.4E

44-0001-06

| 4 | 3 |
|---|---|
| 9 | 10 |

M-1

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# CITY OF SCOTTSDALE Scale 1" = 400'

**PLATE 7B**

T.5 N, R.4 E

44-0001-06

| 16 | 15 |
|---|---|
| 21 | 22 |

L-1