PRELIMINARY DRAINAGE REPORT

For
Dream Center – Scottsdale First Assembly
South of SWC Pima Road & Via Dona Road
City of Scottsdale, Arizona
QS #51-48

88-PA-2001

Prepared for:

Scottsdale First Assembly
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Job No. 5843
Prepared November 25, 2002

88-PA-2001 #2

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2. Proposed Drainage Map
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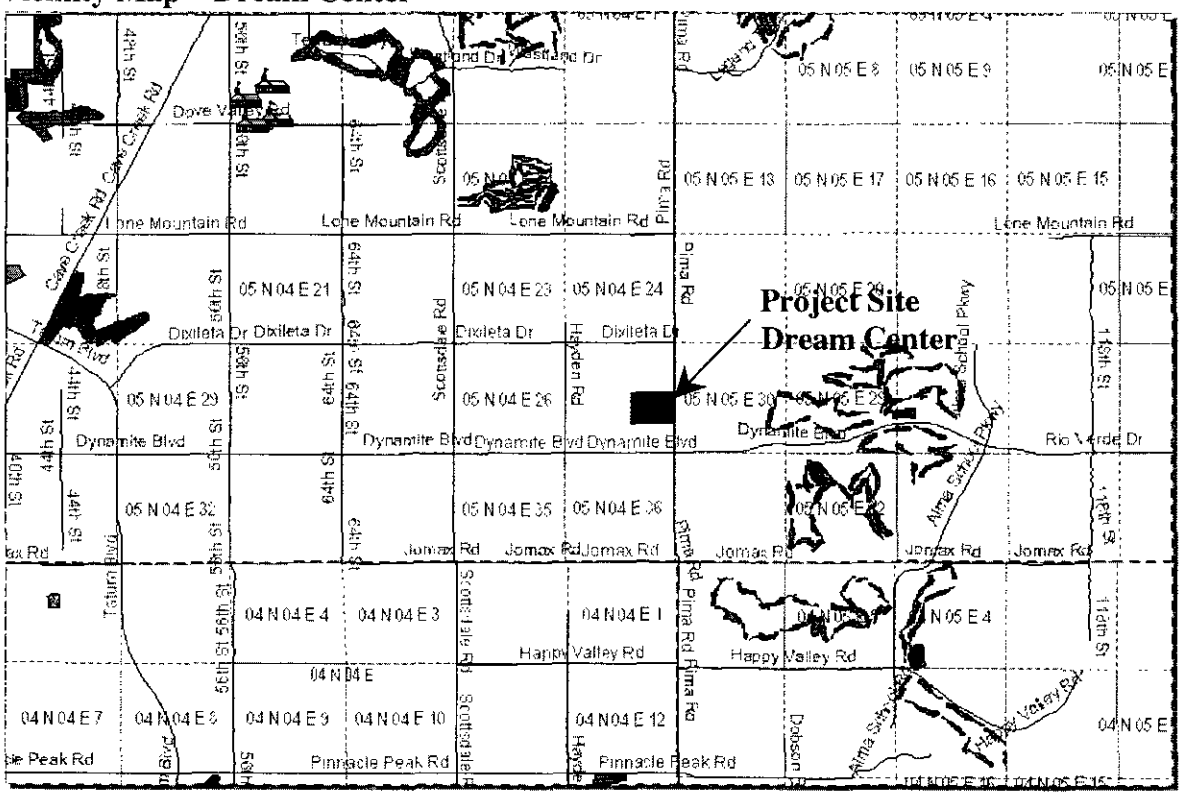
4. FIRM Map
5. City Aerial Photo
6. Regional Storm Water Management Plan

1.0 Introduction

Project Description
The proposed Dream Center (Scottsdale First Assembly) Site is located in the City of Scottsdale just South of the Southwest corner of Pima Road and Via Dona Road. The subject site is situated in the Southeast ¼ of Section 25, Township 5 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona (see Vicinity Map below). This project is in the Environmentally Sensitive Land (ESL) Area of Scottsdale per the City of Scottsdale's Design Standards and Policies Manual (DSPM) Figure 2.1-3.

The proposed Dream Center Site is on a 26.2-acre vacant, undisturbed desert parcel. This report is a preliminary drainage report for a Development Review Board submittal.

Vicinity Map – Dream Center



Purpose of Drainage Report
The purpose of this report is to address storm water retention and runoff on the site of the proposed Dream Center development. It is also intended as a guide to assist in the preliminary grading and drainage design. Storm water requirements are designed in general accordance with the *City of Scottsdale Design Standards, Chapter 2.2 Hydrology.*

2.0 Existing Drainage Characteristics

Natural Drainage Characteristics
The existing site slopes to the south and west at approximately 3.3% (see Exhibit 1 – Existing Drainage Map, Appendix F). The Rawhide Regional Wash is directly adjacent to the site along the eastside of its westerly boundary. The 100-year floodplain boundary for Rawhide Wash is shown on the Existing Drainage Map. This boundary was taken from the Kimley-Horn report titled "Upper Rawhide Wash – Floodplain Delineation Study FCD 98-12" prepared for the Flood Control District. This delineation is considered preliminary but will be approved by FEMA in the near future. Please see Appendix D for Site Photos and Appendix E for excerpts from this report.

The existing drainage map shows the existing drainage patterns and natural watercourses. Per ordinance, within Environmentally Sensitive Lands (ESL), all washes with a 50 cfs or greater capacity must remain in their natural state and their 100-year floodplain dedicated as a drainage easement. Wash E has an existing bank full flow capacity greater than 50 cfs, therefore a drainage easement will be provided. All other washes on-site have an existing bank full flow capacity less than 50 cfs. Please see Appendix D for existing wash pictures and Appendix B for bank full flow calculations.

Offsite drainage characteristics
The off-site contributing watershed into the site has been defined by the "Upper Rawhide Wash – Floodplain Delineation Study." This report was prepared by Kimley-Horn and Associates, Inc. and dated June 2001. This report indicates that two off-site watershed basins (051 and 053) enter the project site (see Figure 4-1 of the Upper Rawhide Wash study in Appendix E). Watershed basin 051 effects Washes C, D, E and F and watershed basin 053 effects Washes A, B and G.

Washes A and B collect small amounts of storm runoff from Watershed 053. Most of the runoff east of the Dream Center Site is diverted by the construction of Pima Road. Since only a minimal amount of storm water crosses Pima Road and enters Washes A and/or B, the rational method was used to determine off-site runoff.

Wash C collects a small sub area of Watershed 051. This runoff is diverted into a 24" CMP culvert that has a capacity of 25 cfs (see Appendix D for culvert capacity calculation). The rational method was used to determine off-site runoff.

Wash D collects a minimal amount of storm runoff from Watershed 051. Most of the off-site runoff is diverted by the construction of Pima Road. The rational method was used to determine off-site runoff.

Wash E collects most of the storm runoff from Watershed 051. Some runoff is diverted by the construction of Via Dona Road and Pima Road. The Upper Rawhide Wash study shows an off-site watershed "collection point" or "concentration point" number CP051 at the point where Wash E and Rawhide Wash intersect (see Appendix E). This concentration point shows an existing 100-year, 6-hour storm water runoff value for

Wash E (Watershed 051) of 112 cfs. The 112 cfs flow was used for the HEC-RAS run to determine the water surface elevations along Wash E (see Appendix B for HEC-RAS model, prepared by Huitt-Zollars).

Wash F collects a minimal amount of storm runoff from Watershed 051. Most of the off-site runoff is diverted by the construction of Via Dona Road that is north of the site. The rational method was used to determine the off-site runoff.

Rawhide Wash runs the entire length of the west side of the Dream Center Site. Runoff from Rawhide Wash will be passed through the site as exists today. No improvements will be made inside the 100-year floodplain boundary as shown on the Existing Drainage Map (Exhibit 1).

No off-site runoff enters from the south side of the property since the property slopes southwest at 3.3%.

All of the off-site boundaries were taken from the Kimley-Horn report.

Existing runoff through the site was determined by the rational method except for Wash B and E. A HEC-1 model was prepared for Wash B per directions from the City of Scottsdale Engineering staff (see Appendix B). The warning "Time interval is greater than 0.29*Lag" is encountered in the HEC-1 model, but is not documented in the HEC-1 Manual. Therefore the following check was made to evaluate the warning:

> The NMIN parameter was changed on the IT record from 5 minutes to 1 minute and the message did not appear. The resulting peak discharge, time to peak, and rainfall excess values of the model were compared at both intervals with nearly identical results.

Wash E runoff was taken from the "Upper Rawhide Wash – Floodplain Delineation Study" prepared by Kimley-Horn.

Relation to adjacent drainage plans and projects.
Rawhide Wash runs along the entire west side of the project site. The proposed Rawhide Wash Detention Basin is located north of Jomax Road, and west of Pima Road, approximately one-mile south of this project.

Currently, no City of Scottsdale Drainage Map exists for this area in the City Limits.

Existing Soil Conditions
The General Soil Map for Maricopa County (see Exhibit 3) indicates that the existing soils are B4m and FGrB (B4m - soils with limy clay loam sub soils; FGrB – Shallow soils over granite, 5 – 15% slopes). The B4m soils are members of the fine-loamy, mixed, thermic family of Typic Haplargids and are similar to, or identified with, the Mohave series and associated soils. They are on level to gently sloping fans and valley slopes. The FGrB soils are on sloping to rolling uplands. This unit consists of gravelly,

cobbly and/or stony coarse sandy loam to light loam soil material over unweathered and/or weathered granite and related crystalline bedrock at depths generally less than 20 inches.

Floodplain Designation
The Federal Emergency Management Agency (FEMA) designated the site to be within Flood Zone "X" according to the Flood Insurance Rate Map (FIRM) 04013C1235F, dated July 19, 2001 (see Exhibit 4, Appendix F). Zone "X" is assigned as areas determined to be outside 500-year floodplain.

Existing Irrigation Facilities
There are no existing irrigation facilities on this site.

3.0 Proposed Drainage Plan

General description of proposed drainage system and components
The City of Scottsdale standards require that new developments retain the 100-year, 2-hour storm event on site. This project will provide retention for the disturbed areas of the site.

The site affects three existing drainage areas where on-site storm water runoff will sheet flow across proposed parking lots and drives to outlet points connected to retention basins. Three new retention basins are proposed, located to the north of the proposed parking lots (Basin 2), to the south and west of the proposed building in a natural wash (Basin 1), and near the south east corner of the site (Basin 3).

Basins are formed within a natural wash where runoff is retained behind gabion walls to keep the ESL area disturbance to a minimum. The gabion-faced walls will allow bleed off downstream at an appropriate rate. During final design, this bleed off rate will be determined. If it is determined that the basin will not drain within 36 hours, a discharge pipe(s) will be added to allow 1 cfs discharge to the downstream side of the wall/wash. See Exhibit 2, Appendix F for the proposed on-site drainage map.

See Appendix A for the proposed drainage facilities: HEC-1 data and model for Wash B, dimensionless runoff coefficients, basin sizing, post runoff and retention calculations, and peak discharges using the rational method.

This project was requesting that retention be provided for only the difference between the post vs. pre-developed condition since this project is in the ESL area and all storm water runoff is conveyed into the Rawhide Regional Wash, which runs along the entire length of the west property line. City staff has agreed to allow the retention basins to be deeper than 3', which makes a storm water waiver unnecessary.

The amount of storm water runoff that exits the site can be seen on the Existing Drainage Map (Exhibit 1, Appendix F) for the pre-runoff condition and on the Proposed Drainage Map (Exhibit 2, Appendix F) for the post-runoff condition.

Proposed drainage structures or special drainage facilities:
(Include design criteria and probable effect on the existing upstream and downstream drainage system.)

A private access drive has been designed from the southeast corner of the site. This drive crosses Washes A. A new retention basin (Basin 3) will accept water from this area. A discharge pipe will be added to allow 1 cfs discharge to the downstream side of the street/wash and discharge it to its historical flow path. The 100-yr flow has increased by 1 cfs but the post-runoff calculations do not figure in the retention basin that would decrease the runoff due to routing through the basin.

A portion of Wash B contains proposed parking lot designated as Area 2A (see Exhibit 2, Appendix F). Runoff from the parking lot will sheet flow across the parking lot, enter and flow through Wash B into Retention Basin 1, and ultimately bleed off into the downstream portion of existing Wash B. Wash B was modeled using HEC-1 to route the storm runoff through proposed retention Basin 1. The model shows that during the 100-year storm event the post-runoff peak flow is 17 cfs compared to the pre-runoff flow of 24 cfs. The warning "Time interval is greater than 0.29*Lag" is encountered in the HEC-1 model, but is not documented in the HEC-1 Manual. Therefore the following check was made to evaluate the warning:

> The NMIN parameter was changed on the IT record from 5 minutes to 1 minute and the message did not appear. The resulting peak discharge, time to peak, and rainfall excess values of the model were compared at both intervals with nearly identical results.

Washes C and D contain the proposed parking lot and building areas designated as Areas 3A and 4A (see Exhibit 2, Appendix F). Runoff from the parking lots will be directed through the parking lot via surface sheet flow to Basin 2 where it will be retained and ultimately bleed off into the downstream portion of existing Wash E. The portion of the building found adjacent to Wash E will outlet into Wash E. The historic outfall of these three washes (C, D, and E) is Wash E, which ultimately outfalls into the Rawhide Regional Wash.

Washes 8A and G have slightly reduced in size from existing conditions with no changes to runoff peak flows.

Please see the Proposed Drainage Map (Exhibit 2, Appendix F) for locations of new drainage amenities and reconstructed Washes and Appendix A for hydrologic calculations and the HEC-1 model of Wash B. New equalizer pipes, curb openings and scuppers will be designed during final construction documents.

4.0 SPECIAL CONDITIONS

Stipulations, 404 Permit, NPDES
A letter was sent to the U.S. Army Corps of Engineers for a 404 Permit Determination. A copy of this letter can be seen in Appendix B. USCOE determined that only Wash E falls within their jurisdiction. Since no construction is proposed in Wash E, Section 404 does not apply to this project because there will be no discharge of dredged or fill material to waters of the U.S. Please see Appendix B for the C.O.S. Section 404 Certification Form.

Since October 1, 1992, the National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges required 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). A revision to the law dated October 29, 1999 reduced the five-acre requirement for SWPPPs and NOIs to one acre or more. The city of Scottsdale received its Municipal Separate Storm Sewer System (MS4) NPDES permit (number AZS000020) on August 26, 1999 and is required to have the opportunity to review all SWPPPs and NOIs. The NOI must be sent to the United States Environmental Protection Agency with a copy of the SWPPP and NOI to the city of Scottsdale 72 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 control pollutants in storm water discharges to the maximum extent practicable by reducing erosion potential, minimizing sedimentation, and eliminating non-stormwater discharges from construction sites. This project will comply with the NPDES General Permit and submit the SWPPP and NOI during the final construction document process.

5.0 DATA ANALYSIS METHODS

Hydrologic procedures and assumptions
The peak discharge was determined by using the Rational Method since the watersheds are less than 160 acres in size. A frequency adjustment factor of 1.25 was used for post-developed calculations for the 100-year storm only.

Rational Method: $Q = CiAf$ (COS Section 2.2, page 8)

Where, Q = peak discharge in cfs
C = dimension-less runoff coefficient
C = 0.48
(COS Fig 2.2-17, soil Type "C" for undisturbed natural desert)
I = rainfall intensity (inches/hour)
A = area of the site (acres)
f = frequency adjustment factor
(per FCDMC, f = 1.25 for 100-year storm only)

Hydraulic procedures, methods, and assumptions
The design of the proposed drainage and flood control facilities meet the design criteria and guidance contained in the current Drainage Design Manual for Maricopa County, Volume II Hydraulics (produced by the Flood Control District of Maricopa County) as supplemented by the City of Scottsdale DSPM manual Section 2.3 Hydraulics.

Culverts will be sized to convey the 10-year storm water runoff (per Table 2.3-1 of DSPM). The capacity of the culverts will be 100% of the design discharge plus 30% to accommodate any sediment and debris (per Section 2-304 C.3 of DSPM).

Stormwater storage calculation methods and assumptions
The only method for the determination of the required volume of storm water storage is the standard formula described in Section 2-204 A of the City's DSPM. Please see the storm water storage requirements under the Proposed Drainage Plan Section for methods and assumptions.

6.0 CONCLUSIONS

Overall Project

1. Off-site runoff passing through the site will be collected into existing watercourses and/or rerouted through proposed parking lots to existing washes and into Rawhide Wash and/or historical outfall flow paths.

2. Boundaries for the 100-year Floodplain limits have been established for Rawhide Wash and Wash E (bank full flow greater than 50 cfs). Drainage easements will be dedicated to the City of Scottsdale. Drainage easements will also be provided for the three retention basins. See Exhibit 2, Appendix F.

3. Exhibit 6, Appendix F, Regional Stormwater Management Plan (taken from Reata Pass/Beardsley Wash Alignment Study, Nov. 1992, prepared for City of Scottsdale) shows that this project is out of the Rawhide Wash Alluvial Fan zone (AO Zone).

4. Don Gerkin, COS Engineering Staff, requested the gabion wall heights be checked to verify that they are not considered "dams." HEC Engineering contacted Ann Palaruan, USCOE, who delineated Wash E under their jurisdiction, and she indicated that since the proposed gabion walls for this project are in other washes, USCOE does not review and/or approve anything outside their delineated jurisdiction.

   HEC also contacted Bill Jenkins, Arizona Dept of Water Resources (ADWR) Section Manager for Dam Safety Section. Mr. Jenkins said to follow Table 1 (Exempt Structures) in Title 12, Chapter 15 of the Arizona Administrative Code (see Appendix A). He indicated that the proposed 6'-7' high gabion wall with 0-15 acre-feet of retention is **not** considered a dam.

Project Phasing

At this time, this project has only one phase for the church building and parking area. This drainage report includes the necessary calculations to construct storm water drainage facilities for this project.

APPENDIX A: Proposed Drainage

HEC-1 Data and Model for Wash B
Dimensionless Runoff Coefficients
Basin Sizing
Post Runoff & Retention Calculations for Proposed Drainage Facilities
Peak Discharges using Rational Method
Arizona Administrative Code for Exempt Structures

Per COS: HEC-1 model of Wash B only

Existing Conditon Wash B

Subbasin ID No.	Area (acres)	Area (Sq. Miles)	SCS CN	Percent Impervious	Lag (Hours)	Subbasin Length (feet)	Average Subbasin Slope (%)
2A & 2B	5.4660	0.0085	77	2.54	0.089	1570	3.3

* Percent Impervious: area in Pima Road (0.14 acres)

Proposed Conditon Wash B

Subbasin ID No.	Area (acres)	Area (Sq. Miles)	SCS CN	Percent Impervious	Lag (Hours)	Subbasin Length (feet)	Average Subbasin Slope (%)
2A & 2B	4.5400	0.0071	77	39.71	0.060	1155	2.58

* Percent Impervious: Building and Parking Lot within Wash B (1.80 acres)

Rainfall Loss

SCS Curve Number (COS Fig 2.2-19 * 2.2-20)
Use SCS Soil Survey of Aguila-Carefree Area

Runoff Transformation

SCS Dimensionless Unit Hydrograph
Calculate Lag using Time of Concentration and Travel Time
SCS TR55 Procedure (COS Appendix B)

Computation Time Interval

5 minutes

Channel Routing

Normal Depth (Modified Pols), eight point

Precipitation Values

1-hour Values:

$Y_2 = 1.03$ (2-year, 1-hr value)
$Y_{100} = 2.60$ (100-year, 1-hr value)

Storm Duration For 6-Hour	Return Period 2-year	10-year	100-year	
5-min	0.35	0.58	0.88	
15-min	0.64	1.05	1.61	
1-hr	1.03	1.70	2.60	From Appendix A, Table 1 - Corrected Values
2-hr	1.17	1.90	2.91	
3-hr	1.27	2.03	3.11	
6-hr	1.45	2.28	3.50	From Appendix A, Table 1 - Corrected Values

APPENDIX A

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

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 duration 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	1.45	1.45	1.90	1.90
5	1.93	1.95	2.59	2.54
10	2.24	2.28	2.91	2.92
25	2.73	2.70	3.43	3.45
50	3.20	3.10	3.90	3.92
100	3.37	3.50	4.40	4.40

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 I entitled "Corrected Value."

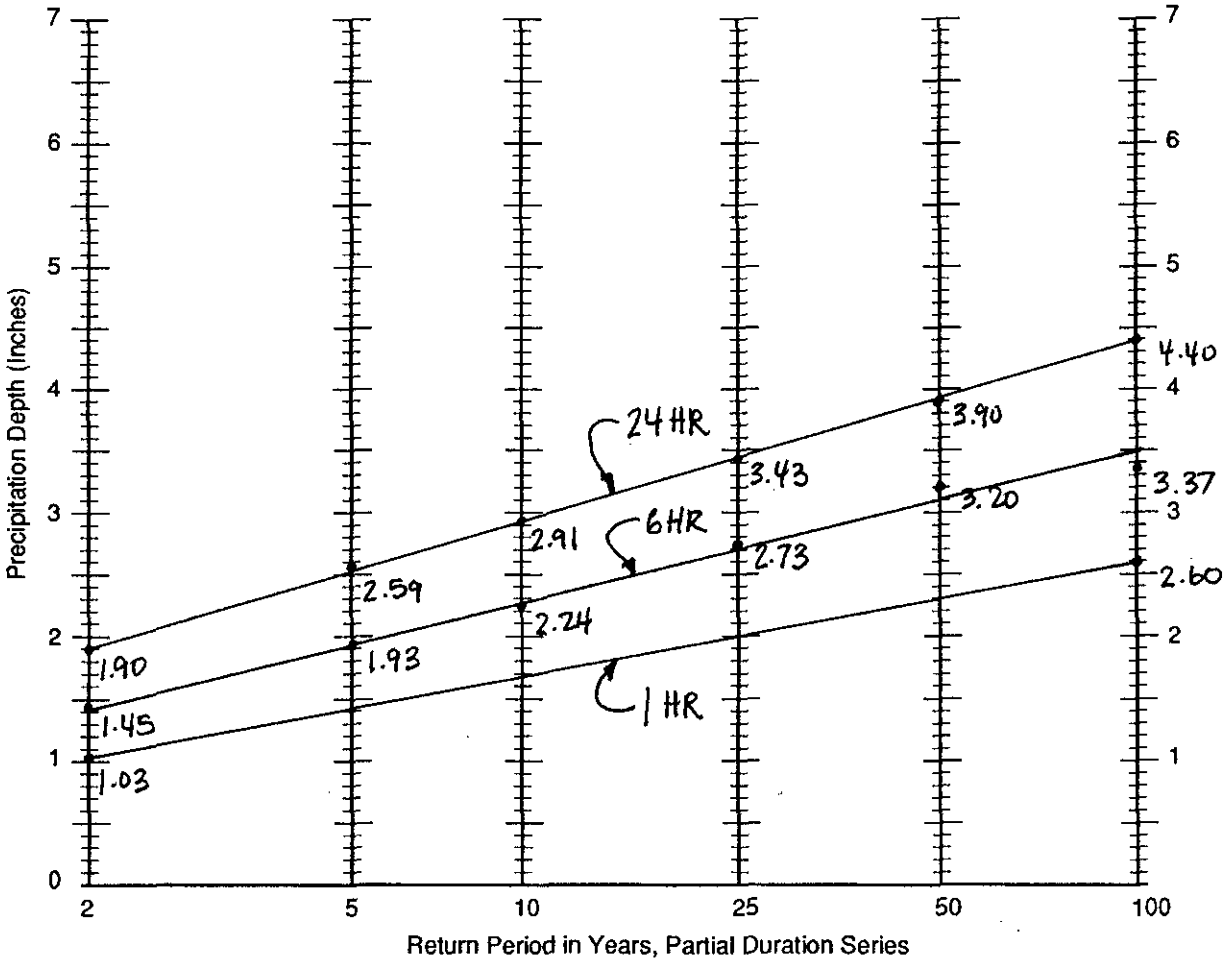
NOTE: The 1 hour precipitation value is needed to determine the 2 and 3 hour values as well as the 5, 10, 15, and 30 minute values.

Sheet 1 of 3

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

APPENDIX A (con't)

Figure 1. Precipitation Depth versus Return Period for Partial Duration Series



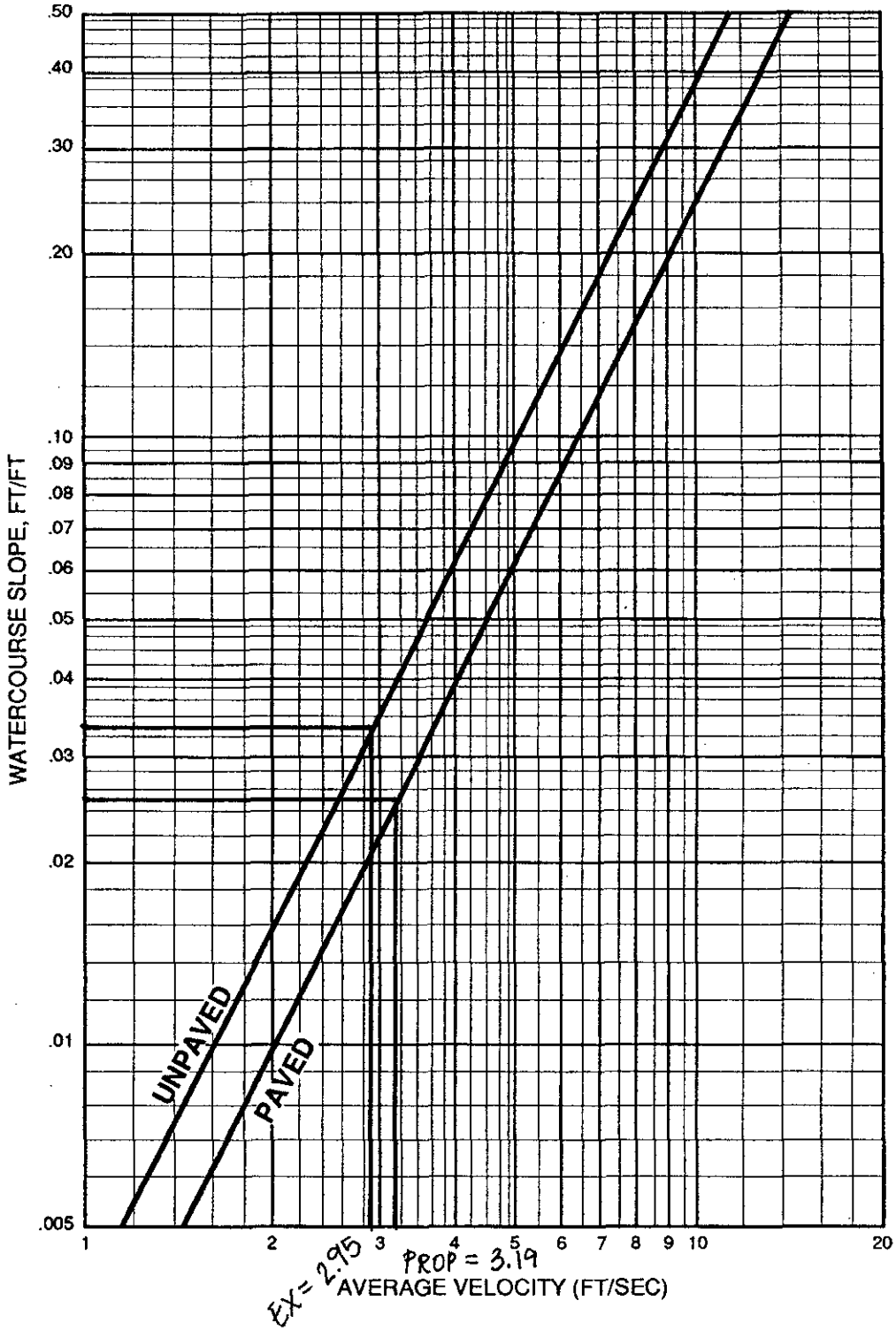
Project: SFA - Dream Center Station: _____

Sheet 2 of 3

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

APPENDIX B (con't)

Figure B-1. Average Velocity for Estimating Travel Time for Shallow Concentrated Flow



Source: TR-55, Fig. 3-1

Sheet 2 of 4

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*                JUN  1998              *
*             VERSION 4.1               *
*                                       *
*  RUN DATE   24NOV02  TIME  03:40:19   *
*                                       *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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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
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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

1 HEC-1 INPUT PAGE 1

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            1           ID        DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
            2           ID        COS NO. 88-PA-2001
            3           ID        HEC ENGINEERING JOB NO. 5843
            4           ID        QS #51-48
            5           ID
            6           ID        THIS HEC-1 RUN IS FOR THE PROPOSED CONDITION OF WASH B
            7           ID        USE SCS METHOD
            8           ID        THIS IS FOR THE 2-YR, 6-HR STORM EVENT
            9           ID
           10           IT       5 14NOV01    1200     300

           11           KK     S-2
           12           KM       RUNOFF FROM SUB BASINS 2A AND 2B
           13           BA  0.0071
           14           PH       50              0.35    0.64    1.03    1.17    1.27    1.45
           15           LS        0       77    39.71
           16           UD   0.060

           17           KK   RESVR
           18           KM       ROUTE OUTLET HYDROGRAPH THROUGH RETENTION BASINS
           19           RS        1    STOR       0
           20           SA    0.002    0.03    0.07    0.13    0.20    0.34
           21           SE     2267    2268    2269    2270    2271    2272
           22           SQ        0     3.7     7.4    11.1    14.8    18.5
           23           ZZ
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
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DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
COS NO. 88-PA-2001
HEC ENGINEERING JOB NO. 5843
QS #51-48

THIS HEC-1 RUN IS FOR THE PROPOSED CONDITION OF WASH B
USE SCS METHOD
THIS IS FOR THE 2-YR, 6-HR STORM EVENT

```
 IT          HYDROGRAPH TIME DATA
                   NMIN          5  MINUTES IN COMPUTATION INTERVAL
                  IDATE     14NOV 1  STARTING DATE
                  ITIME        1200  STARTING TIME
                     NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE     15NOV 1  ENDING DATE
                 NDTIME        1255  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
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TEMPERATURE DEGREES FAHRENHEIT

*** ***

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          **************
          *            *
11 KK     *     S-2    *
          *            *
          **************
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RUNOFF FROM SUB BASINS 2A AND 2B

SUBBASIN RUNOFF DATA

13 BA SUBBASIN CHARACTERISTICS
TAREA .01 SUBBASIN AREA

PRECIPITATION DATA

14 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.35	.64	1.03	1.17	1.27	1.45	.00	.00	.00	.00	.00	.00

STORM AREA = .01

15 LS SCS LOSS RATE
STRTL .60 INITIAL ABSTRACTION
CRVNBR 77.00 CURVE NUMBER
RTIMP 39.71 PERCENT IMPERVIOUS AREA

16 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .06 LAG

***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
6 END-OF-PERIOD ORDINATES

31.	17.	5.	1.	0.	0.

****

HYDROGRAPH AT STATION S-2

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
14	NOV	1200	1	.00	.00	.00	0.	*	15	NOV	0030	151	.00	.00	.00	0.
14	NOV	1205	2	.00	.00	.00	0.	*	15	NOV	0035	152	.00	.00	.00	0.
14	NOV	1210	3	.00	.00	.00	0.	*	15	NOV	0040	153	.00	.00	.00	0.
14	NOV	1215	4	.00	.00	.00	0.	*	15	NOV	0045	154	.00	.00	.00	0.
14	NOV	1220	5	.00	.00	.00	0.	*	15	NOV	0050	155	.00	.00	.00	0.
14	NOV	1225	6	.00	.00	.00	0.	*	15	NOV	0055	156	.00	.00	.00	0.
14	NOV	1230	7	.00	.00	.00	0.	*	15	NOV	0100	157	.00	.00	.00	0.
14	NOV	1235	8	.00	.00	.00	0.	*	15	NOV	0105	158	.00	.00	.00	0.
14	NOV	1240	9	.00	.00	.00	0.	*	15	NOV	0110	159	.00	.00	.00	0.
14	NOV	1245	10	.00	.00	.00	0.	*	15	NOV	0115	160	.00	.00	.00	0.
14	NOV	1250	11	.00	.00	.00	0.	*	15	NOV	0120	161	.00	.00	.00	0.
14	NOV	1255	12	.00	.00	.00	0.	*	15	NOV	0125	162	.00	.00	.00	0.
14	NOV	1300	13	.00	.00	.00	0.	*	15	NOV	0130	163	.00	.00	.00	0.
14	NOV	1305	14	.00	.00	.00	0.	*	15	NOV	0135	164	.00	.00	.00	0.
14	NOV	1310	15	.00	.00	.00	0.	*	15	NOV	0140	165	.00	.00	.00	0.
14	NOV	1315	16	.01	.00	.00	0.	*	15	NOV	0145	166	.00	.00	.00	0.
14	NOV	1320	17	.01	.00	.00	0.	*	15	NOV	0150	167	.00	.00	.00	0.
14	NOV	1325	18	.01	.00	.00	0.	*	15	NOV	0155	168	.00	.00	.00	0.
14	NOV	1330	19	.01	.00	.00	0.	*	15	NOV	0200	169	.00	.00	.00	0.
14	NOV	1335	20	.01	.00	.00	0.	*	15	NOV	0205	170	.00	.00	.00	0.
14	NOV	1340	21	.01	.00	.00	0.	*	15	NOV	0210	171	.00	.00	.00	0.
14	NOV	1345	22	.01	.00	.00	0.	*	15	NOV	0215	172	.00	.00	.00	0.
14	NOV	1350	23	.01	.00	.00	0.	*	15	NOV	0220	173	.00	.00	.00	0.
14	NOV	1355	24	.01	.00	.00	0.	*	15	NOV	0225	174	.00	.00	.00	0.
14	NOV	1400	25	.01	.00	.00	0.	*	15	NOV	0230	175	.00	.00	.00	0.
14	NOV	1405	26	.01	.00	.00	0.	*	15	NOV	0235	176	.00	.00	.00	0.
14	NOV	1410	27	.01	.01	.00	0.	*	15	NOV	0240	177	.00	.00	.00	0.
14	NOV	1415	28	.01	.01	.00	0.	*	15	NOV	0245	178	.00	.00	.00	0.
14	NOV	1420	29	.01	.01	.00	0.	*	15	NOV	0250	179	.00	.00	.00	0.
14	NOV	1425	30	.01	.01	.00	0.	*	15	NOV	0255	180	.00	.00	.00	0.
14	NOV	1430	31	.01	.01	.01	0.	*	15	NOV	0300	181	.00	.00	.00	0.
14	NOV	1435	32	.02	.01	.01	0.	*	15	NOV	0305	182	.00	.00	.00	0.
14	NOV	1440	33	.03	.02	.01	1.	*	15	NOV	0310	183	.00	.00	.00	0.
14	NOV	1445	34	.03	.02	.01	1.	*	15	NOV	0315	184	.00	.00	.00	0.
14	NOV	1450	35	.05	.03	.02	1.	*	15	NOV	0320	185	.00	.00	.00	0.
14	NOV	1455	36	.06	.04	.03	1.	*	15	NOV	0325	186	.00	.00	.00	0.
14	NOV	1500	37	.15	.09	.06	2.	*	15	NOV	0330	187	.00	.00	.00	0.
14	NOV	1505	38	.31	.17	.13	5.	*	15	NOV	0335	188	.00	.00	.00	0.
14	NOV	1510	39	.10	.05	.05	4.	*	15	NOV	0340	189	.00	.00	.00	0.
14	NOV	1515	40	.06	.03	.03	3.	*	15	NOV	0345	190	.00	.00	.00	0.
14	NOV	1520	41	.04	.02	.02	2.	*	15	NOV	0350	191	.00	.00	.00	0.
14	NOV	1525	42	.03	.01	.02	1.	*	15	NOV	0355	192	.00	.00	.00	0.
14	NOV	1530	43	.03	.01	.01	1.	*	15	NOV	0400	193	.00	.00	.00	0.
14	NOV	1535	44	.01	.01	.01	1.	*	15	NOV	0405	194	.00	.00	.00	0.
14	NOV	1540	45	.01	.01	.01	0.	*	15	NOV	0410	195	.00	.00	.00	0.
14	NOV	1545	46	.01	.00	.01	0.	*	15	NOV	0415	196	.00	.00	.00	0.
14	NOV	1550	47	.01	.00	.01	0.	*	15	NOV	0420	197	.00	.00	.00	0.
14	NOV	1555	48	.01	.00	.01	0.	*	15	NOV	0425	198	.00	.00	.00	0.
14	NOV	1600	49	.01	.00	.00	0.	*	15	NOV	0430	199	.00	.00	.00	0.
14	NOV	1605	50	.01	.00	.00	0.	*	15	NOV	0435	200	.00	.00	.00	0.
14	NOV	1610	51	.01	.00	.00	0.	*	15	NOV	0440	201	.00	.00	.00	0.
14	NOV	1615	52	.01	.00	.00	0.	*	15	NOV	0445	202	.00	.00	.00	0.
14	NOV	1620	53	.01	.00	.00	0.	*	15	NOV	0450	203	.00	.00	.00	0.
14	NOV	1625	54	.01	.00	.00	0.	*	15	NOV	0455	204	.00	.00	.00	0.

14	NOV	1630	55	.01	.00	.00	0.	*	15	NOV	0500	205	.00	.00	.00	0.
14	NOV	1635	56	.01	.00	.00	0.	*	15	NOV	0505	206	.00	.00	.00	0.
14	NOV	1640	57	.01	.00	.00	0.	*	15	NOV	0510	207	.00	.00	.00	0.
14	NOV	1645	58	.01	.00	.00	0.	*	15	NOV	0515	208	.00	.00	.00	0.
14	NOV	1650	59	.01	.00	.00	0.	*	15	NOV	0520	209	.00	.00	.00	0.
14	NOV	1655	60	.01	.00	.00	0.	*	15	NOV	0525	210	.00	.00	.00	0.
14	NOV	1700	61	.00	.00	.00	0.	*	15	NOV	0530	211	.00	.00	.00	0.
14	NOV	1705	62	.00	.00	.00	0.	*	15	NOV	0535	212	.00	.00	.00	0.
14	NOV	1710	63	.00	.00	.00	0.	*	15	NOV	0540	213	.00	.00	.00	0.
14	NOV	1715	64	.00	.00	.00	0.	*	15	NOV	0545	214	.00	.00	.00	0.
14	NOV	1720	65	.00	.00	.00	0.	*	15	NOV	0550	215	.00	.00	.00	0.
14	NOV	1725	66	.00	.00	.00	0.	*	15	NOV	0555	216	.00	.00	.00	0.
14	NOV	1730	67	.00	.00	.00	0.	*	15	NOV	0600	217	.00	.00	.00	0.
14	NOV	1735	68	.00	.00	.00	0.	*	15	NOV	0605	218	.00	.00	.00	0.
14	NOV	1740	69	.00	.00	.00	0.	*	15	NOV	0610	219	.00	.00	.00	0.
14	NOV	1745	70	.00	.00	.00	0.	*	15	NOV	0615	220	.00	.00	.00	0.
14	NOV	1750	71	.00	.00	.00	0.	*	15	NOV	0620	221	.00	.00	.00	0.
14	NOV	1755	72	.00	.00	.00	0.	*	15	NOV	0625	222	.00	.00	.00	0.
14	NOV	1800	73	.00	.00	.00	0.	*	15	NOV	0630	223	.00	.00	.00	0.
14	NOV	1805	74	.00	.00	.00	0.	*	15	NOV	0635	224	.00	.00	.00	0.
14	NOV	1810	75	.00	.00	.00	0.	*	15	NOV	0640	225	.00	.00	.00	0.
14	NOV	1815	76	.00	.00	.00	0.	*	15	NOV	0645	226	.00	.00	.00	0.
14	NOV	1820	77	.00	.00	.00	0.	*	15	NOV	0650	227	.00	.00	.00	0.
14	NOV	1825	78	.00	.00	.00	0.	*	15	NOV	0655	228	.00	.00	.00	0.
14	NOV	1830	79	.00	.00	.00	0.	*	15	NOV	0700	229	.00	.00	.00	0.
14	NOV	1835	80	.00	.00	.00	0.	*	15	NOV	0705	230	.00	.00	.00	0.
14	NOV	1840	81	.00	.00	.00	0.	*	15	NOV	0710	231	.00	.00	.00	0.
14	NOV	1845	82	.00	.00	.00	0.	*	15	NOV	0715	232	.00	.00	.00	0.
14	NOV	1850	83	.00	.00	.00	0.	*	15	NOV	0720	233	.00	.00	.00	0.
14	NOV	1855	84	.00	.00	.00	0.	*	15	NOV	0725	234	.00	.00	.00	0.
14	NOV	1900	85	.00	.00	.00	0.	*	15	NOV	0730	235	.00	.00	.00	0.
14	NOV	1905	86	.00	.00	.00	0.	*	15	NOV	0735	236	.00	.00	.00	0.
14	NOV	1910	87	.00	.00	.00	0.	*	15	NOV	0740	237	.00	.00	.00	0.
14	NOV	1915	88	.00	.00	.00	0.	*	15	NOV	0745	238	.00	.00	.00	0.
14	NOV	1920	89	.00	.00	.00	0.	*	15	NOV	0750	239	.00	.00	.00	0.
14	NOV	1925	90	.00	.00	.00	0.	*	15	NOV	0755	240	.00	.00	.00	0.
14	NOV	1930	91	.00	.00	.00	0.	*	15	NOV	0800	241	.00	.00	.00	0.
14	NOV	1935	92	.00	.00	.00	0.	*	15	NOV	0805	242	.00	.00	.00	0.
14	NOV	1940	93	.00	.00	.00	0.	*	15	NOV	0810	243	.00	.00	.00	0.
14	NOV	1945	94	.00	.00	.00	0.	*	15	NOV	0815	244	.00	.00	.00	0.
14	NOV	1950	95	.00	.00	.00	0.	*	15	NOV	0820	245	.00	.00	.00	0.
14	NOV	1955	96	.00	.00	.00	0.	*	15	NOV	0825	246	.00	.00	.00	0.
14	NOV	2000	97	.00	.00	.00	0.	*	15	NOV	0830	247	.00	.00	.00	0.
14	NOV	2005	98	.00	.00	.00	0.	*	15	NOV	0835	248	.00	.00	.00	0.
14	NOV	2010	99	.00	.00	.00	0.	*	15	NOV	0840	249	.00	.00	.00	0.
14	NOV	2015	100	.00	.00	.00	0.	*	15	NOV	0845	250	.00	.00	.00	0.
14	NOV	2020	101	.00	.00	.00	0.	*	15	NOV	0850	251	.00	.00	.00	0.
14	NOV	2025	102	.00	.00	.00	0.	*	15	NOV	0855	252	.00	.00	.00	0.
14	NOV	2030	103	.00	.00	.00	0.	*	15	NOV	0900	253	.00	.00	.00	0.
14	NOV	2035	104	.00	.00	.00	0.	*	15	NOV	0905	254	.00	.00	.00	0.
14	NOV	2040	105	.00	.00	.00	0.	*	15	NOV	0910	255	.00	.00	.00	0.
14	NOV	2045	106	.00	.00	.00	0.	*	15	NOV	0915	256	.00	.00	.00	0.
14	NOV	2050	107	.00	.00	.00	0.	*	15	NOV	0920	257	.00	.00	.00	0.
14	NOV	2055	108	.00	.00	.00	0.	*	15	NOV	0925	258	.00	.00	.00	0.
14	NOV	2100	109	.00	.00	.00	0.	*	15	NOV	0930	259	.00	.00	.00	0.
14	NOV	2105	110	.00	.00	.00	0.	*	15	NOV	0935	260	.00	.00	.00	0.
14	NOV	2110	111	.00	.00	.00	0.	*	15	NOV	0940	261	.00	.00	.00	0.
14	NOV	2115	112	.00	.00	.00	0.	*	15	NOV	0945	262	.00	.00	.00	0.
14	NOV	2120	113	.00	.00	.00	0.	*	15	NOV	0950	263	.00	.00	.00	0.
14	NOV	2125	114	.00	.00	.00	0.	*	15	NOV	0955	264	.00	.00	.00	0.
14	NOV	2130	115	.00	.00	.00	0.	*	15	NOV	1000	265	.00	.00	.00	0.
14	NOV	2135	116	.00	.00	.00	0.	*	15	NOV	1005	266	.00	.00	.00	0.
14	NOV	2140	117	.00	.00	.00	0.	*	15	NOV	1010	267	.00	.00	.00	0.
14	NOV	2145	118	.00	.00	.00	0.	*	15	NOV	1015	268	.00	.00	.00	0.
14	NOV	2150	119	.00	.00	.00	0.	*	15	NOV	1020	269	.00	.00	.00	0.
14	NOV	2155	120	.00	.00	.00	0.	*	15	NOV	1025	270	.00	.00	.00	0.
14	NOV	2200	121	.00	.00	.00	0.	*	15	NOV	1030	271	.00	.00	.00	0.
14	NOV	2205	122	.00	.00	.00	0.	*	15	NOV	1035	272	.00	.00	.00	0.
14	NOV	2210	123	.00	.00	.00	0.	*	15	NOV	1040	273	.00	.00	.00	0.
14	NOV	2215	124	.00	.00	.00	0.	*	15	NOV	1045	274	.00	.00	.00	0.
14	NOV	2220	125	.00	.00	.00	0.	*	15	NOV	1050	275	.00	.00	.00	0.
14	NOV	2225	126	.00	.00	.00	0.	*	15	NOV	1055	276	.00	.00	.00	0.
14	NOV	2230	127	.00	.00	.00	0.	*	15	NOV	1100	277	.00	.00	.00	0.
14	NOV	2235	128	.00	.00	.00	0.	*	15	NOV	1105	278	.00	.00	.00	0.
14	NOV	2240	129	.00	.00	.00	0.	*	15	NOV	1110	279	.00	.00	.00	0.
14	NOV	2245	130	.00	.00	.00	0.	*	15	NOV	1115	280	.00	.00	.00	0.
14	NOV	2250	131	.00	.00	.00	0.	*	15	NOV	1120	281	.00	.00	.00	0.
14	NOV	2255	132	.00	.00	.00	0.	*	15	NOV	1125	282	.00	.00	.00	0.
14	NOV	2300	133	.00	.00	.00	0.	*	15	NOV	1130	283	.00	.00	.00	0.
14	NOV	2305	134	.00	.00	.00	0.	*	15	NOV	1135	284	.00	.00	.00	0.
14	NOV	2310	135	.00	.00	.00	0.	*	15	NOV	1140	285	.00	.00	.00	0.
14	NOV	2315	136	.00	.00	.00	0.	*	15	NOV	1145	286	.00	.00	.00	0.
14	NOV	2320	137	.00	.00	.00	0.	*	15	NOV	1150	287	.00	.00	.00	0.
14	NOV	2325	138	.00	.00	.00	0.	*	15	NOV	1155	288	.00	.00	.00	0.
14	NOV	2330	139	.00	.00	.00	0.	*	15	NOV	1200	289	.00	.00	.00	0.
14	NOV	2335	140	.00	.00	.00	0.	*	15	NOV	1205	290	.00	.00	.00	0.
14	NOV	2340	141	.00	.00	.00	0.	*	15	NOV	1210	291	.00	.00	.00	0.
14	NOV	2345	142	.00	.00	.00	0.	*	15	NOV	1215	292	.00	.00	.00	0.
14	NOV	2350	143	.00	.00	.00	0.	*	15	NOV	1220	293	.00	.00	.00	0.
14	NOV	2355	144	.00	.00	.00	0.	*	15	NOV	1225	294	.00	.00	.00	0.
15	NOV	0000	145	.00	.00	.00	0.	*	15	NOV	1230	295	.00	.00	.00	0.
15	NOV	0005	146	.00	.00	.00	0.	*	15	NOV	1235	296	.00	.00	.00	0.
15	NOV	0010	147	.00	.00	.00	0.	*	15	NOV	1240	297	.00	.00	.00	0.
15	NOV	0015	148	.00	.00	.00	0.	*	15	NOV	1245	298	.00	.00	.00	0.
15	NOV	0020	149	.00	.00	.00	0.	*	15	NOV	1250	299	.00	.00	.00	0.
15	NOV	0025	150	.00	.00	.00	0.	*	15	NOV	1255	300	.00	.00	.00	0.

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TOTAL RAINFALL = 1.28, TOTAL LOSS = .69, TOTAL EXCESS = .58

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW (CFS) 6-HR	24-HR	72-HR	24.92-HR
5.	3.08	0.	0.	0.	0.

(INCHES)	.581	.582	.582	.582
(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .01 SQ MI

*** ***

17 KK RESVR

ROUTE OUTLET HYDROGRAPH THROUGH RETENTION BASINS

HYDROGRAPH ROUTING DATA

19 RS STORAGE ROUTING

NSTPS 1 NUMBER OF SUBREACHES
ITYP STOR TYPE OF INITIAL CONDITION
RSVRIC .00 INITIAL CONDITION
X .00 WORKING R AND D COEFFICIENT

20 SA	AREA	.0	.0	.1	.1	.2	.3
21 SE	ELEVATION	2267.00	2268.00	2269.00	2270.00	2271.00	2272.00
22 SQ	DISCHARGE	0.	4.	7.	11.	15.	19.

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COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.01	.06	.16	.32	.59
ELEVATION	2267.00	2268.00	2269.00	2270.00	2271.00	2272.00

HYDROGRAPH AT STATION RESVR

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
14	NOV	1200	1	0.	.0	2267.0	14	NOV	2020	101	0.	.0	2267.0	15	NOV	0440	201	0.	.0	2267.0
14	NOV	1205	2	0.	.0	2267.0	14	NOV	2025	102	0.	.0	2267.0	15	NOV	0445	202	0.	.0	2267.0
14	NOV	1210	3	0.	.0	2267.0	14	NOV	2030	103	0.	.0	2267.0	15	NOV	0450	203	0.	.0	2267.0
14	NOV	1215	4	0.	.0	2267.0	14	NOV	2035	104	0.	.0	2267.0	15	NOV	0455	204	0.	.0	2267.0
14	NOV	1220	5	0.	.0	2267.0	14	NOV	2040	105	0.	.0	2267.0	15	NOV	0500	205	0.	.0	2267.0
14	NOV	1225	6	0.	.0	2267.0	14	NOV	2045	106	0.	.0	2267.0	15	NOV	0505	206	0.	.0	2267.0
14	NOV	1230	7	0.	.0	2267.0	14	NOV	2050	107	0.	.0	2267.0	15	NOV	0510	207	0.	.0	2267.0
14	NOV	1235	8	0.	.0	2267.0	14	NOV	2055	108	0.	.0	2267.0	15	NOV	0515	208	0.	.0	2267.0
14	NOV	1240	9	0.	.0	2267.0	14	NOV	2100	109	0.	.0	2267.0	15	NOV	0520	209	0.	.0	2267.0
14	NOV	1245	10	0.	.0	2267.0	14	NOV	2105	110	0.	.0	2267.0	15	NOV	0525	210	0.	.0	2267.0
14	NOV	1250	11	0.	.0	2267.0	14	NOV	2110	111	0.	.0	2267.0	15	NOV	0530	211	0.	.0	2267.0
14	NOV	1255	12	0.	.0	2267.0	14	NOV	2115	112	0.	.0	2267.0	15	NOV	0535	212	0.	.0	2267.0
14	NOV	1300	13	0.	.0	2267.0	14	NOV	2120	113	0.	.0	2267.0	15	NOV	0540	213	0.	.0	2267.0
14	NOV	1305	14	0.	.0	2267.0	14	NOV	2125	114	0.	.0	2267.0	15	NOV	0545	214	0.	.0	2267.0
14	NOV	1310	15	0.	.0	2267.0	14	NOV	2130	115	0.	.0	2267.0	15	NOV	0550	215	0.	.0	2267.0
14	NOV	1315	16	0.	.0	2267.0	14	NOV	2135	116	0.	.0	2267.0	15	NOV	0555	216	0.	.0	2267.0
14	NOV	1320	17	0.	.0	2267.0	14	NOV	2140	117	0.	.0	2267.0	15	NOV	0600	217	0.	.0	2267.0
14	NOV	1325	18	0.	.0	2267.0	14	NOV	2145	118	0.	.0	2267.0	15	NOV	0605	218	0.	.0	2267.0
14	NOV	1330	19	0.	.0	2267.0	14	NOV	2150	119	0.	.0	2267.0	15	NOV	0610	219	0.	.0	2267.0
14	NOV	1335	20	0.	.0	2267.0	14	NOV	2155	120	0.	.0	2267.0	15	NOV	0615	220	0.	.0	2267.0
14	NOV	1340	21	0.	.0	2267.0	14	NOV	2200	121	0.	.0	2267.0	15	NOV	0620	221	0.	.0	2267.0
14	NOV	1345	22	0.	.0	2267.0	14	NOV	2205	122	0.	.0	2267.0	15	NOV	0625	222	0.	.0	2267.0
14	NOV	1350	23	0.	.0	2267.0	14	NOV	2210	123	0.	.0	2267.0	15	NOV	0630	223	0.	.0	2267.0
14	NOV	1355	24	0.	.0	2267.0	14	NOV	2215	124	0.	.0	2267.0	15	NOV	0635	224	0.	.0	2267.0
14	NOV	1400	25	0.	.0	2267.0	14	NOV	2220	125	0.	.0	2267.0	15	NOV	0640	225	0.	.0	2267.0
14	NOV	1405	26	0.	.0	2267.0	14	NOV	2225	126	0.	.0	2267.0	15	NOV	0645	226	0.	.0	2267.0
14	NOV	1410	27	0.	.0	2267.0	14	NOV	2230	127	0.	.0	2267.0	15	NOV	0650	227	0.	.0	2267.0
14	NOV	1415	28	0.	.0	2267.1	14	NOV	2235	128	0.	.0	2267.0	15	NOV	0655	228	0.	.0	2267.0
14	NOV	1420	29	0.	.0	2267.1	14	NOV	2240	129	0.	.0	2267.0	15	NOV	0700	229	0.	.0	2267.0
14	NOV	1425	30	0.	.0	2267.1	14	NOV	2245	130	0.	.0	2267.0	15	NOV	0705	230	0.	.0	2267.0
14	NOV	1430	31	0.	.0	2267.1	14	NOV	2250	131	0.	.0	2267.0	15	NOV	0710	231	0.	.0	2267.0
14	NOV	1435	32	0.	.0	2267.1	14	NOV	2255	132	0.	.0	2267.0	15	NOV	0715	232	0.	.0	2267.0
14	NOV	1440	33	0.	.0	2267.1	14	NOV	2300	133	0.	.0	2267.0	15	NOV	0720	233	0.	.0	2267.0
14	NOV	1445	34	1.	.0	2267.2	14	NOV	2305	134	0.	.0	2267.0	15	NOV	0725	234	0.	.0	2267.0
14	NOV	1450	35	1.	.0	2267.2	14	NOV	2310	135	0.	.0	2267.0	15	NOV	0730	235	0.	.0	2267.0
14	NOV	1455	36	1.	.0	2267.3	14	NOV	2315	136	0.	.0	2267.0	15	NOV	0735	236	0.	.0	2267.0
14	NOV	1500	37	2.	.0	2267.5	14	NOV	2320	137	0.	.0	2267.0	15	NOV	0740	237	0.	.0	2267.0
14	NOV	1505	38	4.	.0	2268.0	14	NOV	2325	138	0.	.0	2267.0	15	NOV	0745	238	0.	.0	2267.0
14	NOV	1510	39	4.	.0	2268.1	14	NOV	2330	139	0.	.0	2267.0	15	NOV	0750	239	0.	.0	2267.0
14	NOV	1515	40	4.	.0	2268.0	14	NOV	2335	140	0.	.0	2267.0	15	NOV	0755	240	0.	.0	2267.0
14	NOV	1520	41	2.	.0	2267.6	14	NOV	2340	141	0.	.0	2267.0	15	NOV	0800	241	0.	.0	2267.0
14	NOV	1525	42	1.	.0	2267.4	14	NOV	2345	142	0.	.0	2267.0	15	NOV	0805	242	0.	.0	2267.0
14	NOV	1530	43	1.	.0	2267.3	14	NOV	2350	143	0.	.0	2267.0	15	NOV	0810	243	0.	.0	2267.0
14	NOV	1535	44	1.	.0	2267.2	14	NOV	2355	144	0.	.0	2267.0	15	NOV	0815	244	0.	.0	2267.0
14	NOV	1540	45	1.	.0	2267.1	15	NOV	0000	145	0.	.0	2267.0	15	NOV	0820	245	0.	.0	2267.0
14	NOV	1545	46	0.	.0	2267.1	15	NOV	0005	146	0.	.0	2267.0	15	NOV	0825	246	0.	.0	2267.0
14	NOV	1550	47	0.	.0	2267.1	15	NOV	0010	147	0.	.0	2267.0	15	NOV	0830	247	0.	.0	2267.0
14	NOV	1555	48	0.	.0	2267.1	15	NOV	0015	148	0.	.0	2267.0	15	NOV	0835	248	0.	.0	2267.0
14	NOV	1600	49	0.	.0	2267.1	15	NOV	0020	149	0.	.0	2267.0	15	NOV	0840	249	0.	.0	2267.0
14	NOV	1605	50	0.	.0	2267.1	15	NOV	0025	150	0.	.0	2267.0	15	NOV	0845	250	0.	.0	2267.0
14	NOV	1610	51	0.	.0	2267.1	15	NOV	0030	151	0.	.0	2267.0	15	NOV	0850	251	0.	.0	2267.0
14	NOV	1615	52	0.	.0	2267.1	15	NOV	0035	152	0.	.0	2267.0	15	NOV	0855	252	0.	.0	2267.0
14	NOV	1620	53	0.	.0	2267.1	15	NOV	0040	153	0.	.0	2267.0	15	NOV	0900	253	0.	.0	2267.0
14	NOV	1625	54	0.	.0	2267.1	15	NOV	0045	154	0.	.0	2267.0	15	NOV	0905	254	0.	.0	2267.0
14	NOV	1630	55	0.	.0	2267.1	15	NOV	0050	155	0.	.0	2267.0	15	NOV	0910	255	0.	.0	2267.0
14	NOV	1635	56	0.	.0	2267.1	15	NOV	0055	156	0.	.0	2267.0	15	NOV	0915	256	0.	.0	2267.0
14	NOV	1640	57	0.	.0	2267.1	15	NOV	0100	157	0.	.0	2267.0	15	NOV	0920	257	0.	.0	2267.0
14	NOV	1645	58	0.	.0	2267.0	15	NOV	0105	158	0.	.0	2267.0	15	NOV	0925	258	0.	.0	2267.0
14	NOV	1650	59	0.	.0	2267.0	15	NOV	0110	159	0.	.0	2267.0	15	NOV	0930	259	0.	.0	2267.0

14	NOV	1655	60	0.	.0	2267.0	*	15	NOV	0115	160	0.	.0	2267.0	*	15	NOV	0935	260	0.	.0	2267.0	
14	NOV	1700	61	0.	.0	2267.0	*	15	NOV	0120	161	0.	.0	2267.0	*	15	NOV	0940	261	0.	.0	2267.0	
14	NOV	1705	62	0.	.0	2267.0	*	15	NOV	0125	162	0.	.0	2267.0	*	15	NOV	0945	262	0.	.0	2267.0	
14	NOV	1710	63	0.	.0	2267.0	*	15	NOV	0130	163	0.	.0	2267.0	*	15	NOV	0950	263	0.	.0	2267.0	
14	NOV	1715	64	0.	.0	2267.0	*	15	NOV	0135	164	0.	.0	2267.0	*	15	NOV	0955	264	0.	.0	2267.0	
14	NOV	1720	65	0.	.0	2267.0	*	15	NOV	0140	165	0.	.0	2267.0	*	15	NOV	1000	265	0.	.0	2267.0	
14	NOV	1725	66	0.	.0	2267.0	*	15	NOV	0145	166	0.	.0	2267.0	*	15	NOV	1005	266	0.	.0	2267.0	
14	NOV	1730	67	0.	.0	2267.0	*	15	NOV	0150	167	0.	.0	2267.0	*	15	NOV	1010	267	0.	.0	2267.0	
14	NOV	1735	68	0.	.0	2267.0	*	15	NOV	0155	168	0.	.0	2267.0	*	15	NOV	1015	268	0.	.0	2267.0	
14	NOV	1740	69	0.	.0	2267.0	*	15	NOV	0200	169	0.	.0	2267.0	*	15	NOV	1020	269	0.	.0	2267.0	
14	NOV	1745	70	0.	.0	2267.0	*	15	NOV	0205	170	0.	.0	2267.0	*	15	NOV	1025	270	0.	.0	2267.0	
14	NOV	1750	71	0.	.0	2267.0	*	15	NOV	0210	171	0.	.0	2267.0	*	15	NOV	1030	271	0.	.0	2267.0	
14	NOV	1755	72	0.	.0	2267.0	*	15	NOV	0215	172	0.	.0	2267.0	*	15	NOV	1035	272	0.	.0	2267.0	
14	NOV	1800	73	0.	.0	2267.0	*	15	NOV	0220	173	0.	.0	2267.0	*	15	NOV	1040	273	0.	.0	2267.0	
14	NOV	1805	74	0.	.0	2267.0	*	15	NOV	0225	174	0.	.0	2267.0	*	15	NOV	1045	274	0.	.0	2267.0	
14	NOV	1810	75	0.	.0	2267.0	*	15	NOV	0230	175	0.	.0	2267.0	*	15	NOV	1050	275	0.	.0	2267.0	
14	NOV	1815	76	0.	.0	2267.0	*	15	NOV	0235	176	0.	.0	2267.0	*	15	NOV	1055	276	0.	.0	2267.0	
14	NOV	1820	77	0.	.0	2267.0	*	15	NOV	0240	177	0.	.0	2267.0	*	15	NOV	1100	277	0.	.0	2267.0	
14	NOV	1825	78	0.	.0	2267.0	*	15	NOV	0245	178	0.	.0	2267.0	*	15	NOV	1105	278	0.	.0	2267.0	
14	NOV	1830	79	0.	.0	2267.0	*	15	NOV	0250	179	0.	.0	2267.0	*	15	NOV	1110	279	0.	.0	2267.0	
14	NOV	1835	80	0.	.0	2267.0	*	15	NOV	0255	180	0.	.0	2267.0	*	15	NOV	1115	280	0.	.0	2267.0	
14	NOV	1840	81	0.	.0	2267.0	*	15	NOV	0300	181	0.	.0	2267.0	*	15	NOV	1120	281	0.	.0	2267.0	
14	NOV	1845	82	0.	.0	2267.0	*	15	NOV	0305	182	0.	.0	2267.0	*	15	NOV	1125	282	0.	.0	2267.0	
14	NOV	1850	83	0.	.0	2267.0	*	15	NOV	0310	183	0.	.0	2267.0	*	15	NOV	1130	283	0.	.0	2267.0	
14	NOV	1855	84	0.	.0	2267.0	*	15	NOV	0315	184	0.	.0	2267.0	*	15	NOV	1135	284	0.	.0	2267.0	
14	NOV	1900	85	0.	.0	2267.0	*	15	NOV	0320	185	0.	.0	2267.0	*	15	NOV	1140	285	0.	.0	2267.0	
14	NOV	1905	86	0.	.0	2267.0	*	15	NOV	0325	186	0.	.0	2267.0	*	15	NOV	1145	286	0.	.0	2267.0	
14	NOV	1910	87	0.	.0	2267.0	*	15	NOV	0330	187	0.	.0	2267.0	*	15	NOV	1150	287	0.	.0	2267.0	
14	NOV	1915	88	0.	.0	2267.0	*	15	NOV	0335	188	0.	.0	2267.0	*	15	NOV	1155	288	0.	.0	2267.0	
14	NOV	1920	89	0.	.0	2267.0	*	15	NOV	0340	189	0.	.0	2267.0	*	15	NOV	1200	289	0.	.0	2267.0	
14	NOV	1925	90	0.	.0	2267.0	*	15	NOV	0345	190	0.	.0	2267.0	*	15	NOV	1205	290	0.	.0	2267.0	
14	NOV	1930	91	0.	.0	2267.0	*	15	NOV	0350	191	0.	.0	2267.0	*	15	NOV	1210	291	0.	.0	2267.0	
14	NOV	1935	92	0.	.0	2267.0	*	15	NOV	0355	192	0.	.0	2267.0	*	15	NOV	1215	292	0.	.0	2267.0	
14	NOV	1940	93	0.	.0	2267.0	*	15	NOV	0400	193	0.	.0	2267.0	*	15	NOV	1220	293	0.	.0	2267.0	
14	NOV	1945	94	0.	.0	2267.0	*	15	NOV	0405	194	0.	.0	2267.0	*	15	NOV	1225	294	0.	.0	2267.0	
14	NOV	1950	95	0.	.0	2267.0	*	15	NOV	0410	195	0.	.0	2267.0	*	15	NOV	1230	295	0.	.0	2267.0	
14	NOV	1955	96	0.	.0	2267.0	*	15	NOV	0415	196	0.	.0	2267.0	*	15	NOV	1235	296	0.	.0	2267.0	
14	NOV	2000	97	0.	.0	2267.0	*	15	NOV	0420	197	0.	.0	2267.0	*	15	NOV	1240	297	0.	.0	2267.0	
14	NOV	2005	98	0.	.0	2267.0	*	15	NOV	0425	198	0.	.0	2267.0	*	15	NOV	1245	298	0.	.0	2267.0	
14	NOV	2010	99	0.	.0	2267.0	*	15	NOV	0430	199	0.	.0	2267.0	*	15	NOV	1250	299	0.	.0	2267.0	
14	NOV	2015	100	0.	.0	2267.0	*	15	NOV	0435	200	0.	.0	2267.0	*	15	NOV	1255	300	0.	.0	2267.0	
							*								*								

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	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	4.	3.17		0.	0.	0.	0.
			(INCHES)	.581	.582	.582	.582
			(AC-FT)	0.	0.	0.	0.

	PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT)	(HR)				
	0.	3.17	0.	0.	0.	0.

	PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+	(FEET)	(HR)				
	2268.14	3.17	2267.12	2267.03	2267.03	2267.03

CUMULATIVE AREA = .01 SQ MI

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+					6-HOUR	24-HOUR	72-HOUR			
	HYDROGRAPH AT									
+		S-2	5.	3.08	0.	0.	0.	.01		
	ROUTED TO									
+		RESVR	4.	3.17	0.	0.	0.	.01		
+									2268.14	3.17

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

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   24NOV02  TIME  03:39:08   *
*                                       *
*****************************************
```

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

1 HEC-1 INPUT PAGE 1

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

            1           ID        DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
            2           ID        COS NO. 88-PA-2001
            3           ID        HEC ENGINEERING JOB NO. 5843
            4           ID        QS #51-48
            5           ID
            6           ID        THIS HEC-1 RUN IS FOR THE PROPOSED CONDITION OF WASH B
            7           ID        USE SCS METHOD
            8           ID        THIS IS FOR THE 10-YR, 6-HR STORM EVENT
            9           ID
           10           IT       5 14NOV01    1200     300

           11           KK     S-2
           12           KM       RUNOFF FROM SUB BASINS 2A AND 2B
           13           BA  0.0071
           14           PH      50              0.58    1.05    1.70    1.90    2.03    2.28
           15           LS       0      77   39.71
           16           UD   0.060

           17           KK   RESVR
           18           KM       ROUTE OUTLET HYDROGRAPH THROUGH RETENTION BASINS
           19           RS        1    STOR       0
           20           SA   0.002    0.03    0.07    0.13    0.20    0.34
           21           SE    2267    2268    2269    2270    2271    2272
           22           SQ       0     3.7     7.4    11.1    14.8    18.5
           23           ZZ
```


```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   24NOV02  TIME  03:39:08   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
COS NO. 88-PA-2001
HEC ENGINEERING JOB NO. 5843
QS #51-48

THIS HEC-1 RUN IS FOR THE PROPOSED CONDITION OF WASH B
USE SCS METHOD
THIS IS FOR THE 10-YR, 6-HR STORM EVENT

```
IT          HYDROGRAPH TIME DATA
                  NMIN          5  MINUTES IN COMPUTATION INTERVAL
                 IDATE     14NOV 1  STARTING DATE
                 ITIME        1200  STARTING TIME
                    NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE     15NOV 1  ENDING DATE
                 NDTIME        1255  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

*** ***

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           **************
           *            *
 11 KK     *     S-2    *
           *            *
           **************
```

RUNOFF FROM SUB BASINS 2A AND 2B

SUBBASIN RUNOFF DATA

13 BA SUBBASIN CHARACTERISTICS
TAREA .01 SUBBASIN AREA

PRECIPITATION DATA

14 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.58	1.05	1.70	1.90	2.03	2.28	.00	.00	.00	.00	.00	.00

STORM AREA = .01

15 LS SCS LOSS RATE
STRTL .60 INITIAL ABSTRACTION
CRVNBR 77.00 CURVE NUMBER
RTIMP 39.71 PERCENT IMPERVIOUS AREA

16 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .06 LAG

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WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
6 END-OF-PERIOD ORDINATES

31. 17. 5. 1. 0. 0.

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HYDROGRAPH AT STATION S-2

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DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
14 NOV 1200	1	.00	.00	.00	0.	*	15 NOV 0030	151	.00	.00	.00	0.
14 NOV 1205	2	.00	.00	.00	0.	*	15 NOV 0035	152	.00	.00	.00	0.
14 NOV 1210	3	.00	.00	.00	0.	*	15 NOV 0040	153	.00	.00	.00	0.
14 NOV 1215	4	.00	.00	.00	0.	*	15 NOV 0045	154	.00	.00	.00	0.
14 NOV 1220	5	.01	.00	.00	0.	*	15 NOV 0050	155	.00	.00	.00	0.
14 NOV 1225	6	.01	.00	.00	0.	*	15 NOV 0055	156	.00	.00	.00	0.
14 NOV 1230	7	.01	.00	.00	0.	*	15 NOV 0100	157	.00	.00	.00	0.
14 NOV 1235	8	.01	.00	.00	0.	*	15 NOV 0105	158	.00	.00	.00	0.
14 NOV 1240	9	.01	.00	.00	0.	*	15 NOV 0110	159	.00	.00	.00	0.
14 NOV 1245	10	.01	.00	.00	0.	*	15 NOV 0115	160	.00	.00	.00	0.
14 NOV 1250	11	.01	.00	.00	0.	*	15 NOV 0120	161	.00	.00	.00	0.
14 NOV 1255	12	.01	.00	.00	0.	*	15 NOV 0125	162	.00	.00	.00	0.
14 NOV 1300	13	.01	.00	.00	0.	*	15 NOV 0130	163	.00	.00	.00	0.
14 NOV 1305	14	.01	.00	.00	0.	*	15 NOV 0135	164	.00	.00	.00	0.
14 NOV 1310	15	.01	.00	.00	0.	*	15 NOV 0140	165	.00	.00	.00	0.
14 NOV 1315	16	.01	.00	.00	0.	*	15 NOV 0145	166	.00	.00	.00	0.
14 NOV 1320	17	.01	.00	.00	0.	*	15 NOV 0150	167	.00	.00	.00	0.
14 NOV 1325	18	.01	.00	.00	0.	*	15 NOV 0155	168	.00	.00	.00	0.
14 NOV 1330	19	.01	.00	.00	0.	*	15 NOV 0200	169	.00	.00	.00	0.
14 NOV 1335	20	.01	.00	.00	0.	*	15 NOV 0205	170	.00	.00	.00	0.
14 NOV 1340	21	.01	.01	.00	0.	*	15 NOV 0210	171	.00	.00	.00	0.
14 NOV 1345	22	.01	.01	.00	0.	*	15 NOV 0215	172	.00	.00	.00	0.
14 NOV 1350	23	.01	.01	.00	0.	*	15 NOV 0220	173	.00	.00	.00	0.
14 NOV 1355	24	.01	.01	.00	0.	*	15 NOV 0225	174	.00	.00	.00	0.
14 NOV 1400	25	.01	.01	.00	0.	*	15 NOV 0230	175	.00	.00	.00	0.
14 NOV 1405	26	.01	.01	.00	0.	*	15 NOV 0235	176	.00	.00	.00	0.
14 NOV 1410	27	.01	.01	.00	0.	*	15 NOV 0240	177	.00	.00	.00	0.
14 NOV 1415	28	.01	.01	.01	0.	*	15 NOV 0245	178	.00	.00	.00	0.
14 NOV 1420	29	.01	.01	.01	0.	*	15 NOV 0250	179	.00	.00	.00	0.
14 NOV 1425	30	.02	.01	.01	0.	*	15 NOV 0255	180	.00	.00	.00	0.
14 NOV 1430	31	.02	.01	.01	0.	*	15 NOV 0300	181	.00	.00	.00	0.
14 NOV 1435	32	.04	.02	.02	1.	*	15 NOV 0305	182	.00	.00	.00	0.
14 NOV 1440	33	.05	.03	.02	1.	*	15 NOV 0310	183	.00	.00	.00	0.
14 NOV 1445	34	.05	.03	.02	1.	*	15 NOV 0315	184	.00	.00	.00	0.
14 NOV 1450	35	.08	.05	.03	1.	*	15 NOV 0320	185	.00	.00	.00	0.
14 NOV 1455	36	.11	.06	.04	2.	*	15 NOV 0325	186	.00	.00	.00	0.
14 NOV 1500	37	.24	.14	.11	4.	*	15 NOV 0330	187	.00	.00	.00	0.
14 NOV 1505	38	.51	.23	.28	11.	*	15 NOV 0335	188	.00	.00	.00	0.
14 NOV 1510	39	.17	.06	.11	9.	*	15 NOV 0340	189	.00	.00	.00	0.
14 NOV 1515	40	.09	.03	.06	5.	*	15 NOV 0345	190	.00	.00	.00	0.
14 NOV 1520	41	.06	.02	.04	3.	*	15 NOV 0350	191	.00	.00	.00	0.
14 NOV 1525	42	.05	.02	.03	2.	*	15 NOV 0355	192	.00	.00	.00	0.
14 NOV 1530	43	.04	.01	.03	2.	*	15 NOV 0400	193	.00	.00	.00	0.
14 NOV 1535	44	.02	.01	.01	1.	*	15 NOV 0405	194	.00	.00	.00	0.
14 NOV 1540	45	.02	.01	.01	1.	*	15 NOV 0410	195	.00	.00	.00	0.
14 NOV 1545	46	.02	.00	.01	1.	*	15 NOV 0415	196	.00	.00	.00	0.
14 NOV 1550	47	.01	.00	.01	1.	*	15 NOV 0420	197	.00	.00	.00	0.
14 NOV 1555	48	.01	.00	.01	1.	*	15 NOV 0425	198	.00	.00	.00	0.
14 NOV 1600	49	.01	.00	.01	0.	*	15 NOV 0430	199	.00	.00	.00	0.
14 NOV 1605	50	.01	.00	.01	0.	*	15 NOV 0435	200	.00	.00	.00	0.
14 NOV 1610	51	.01	.00	.01	0.	*	15 NOV 0440	201	.00	.00	.00	0.
14 NOV 1615	52	.01	.00	.01	0.	*	15 NOV 0445	202	.00	.00	.00	0.
14 NOV 1620	53	.01	.00	.01	0.	*	15 NOV 0450	203	.00	.00	.00	0.
14 NOV 1625	54	.01	.00	.01	0.	*	15 NOV 0455	204	.00	.00	.00	0.

14	NOV	1630	55	.01	.00	.01	0.	*	15	NOV	0500	205	.00	.00	.00	0.
14	NOV	1635	56	.01	.00	.01	0.	*	15	NOV	0505	206	.00	.00	.00	0.
14	NOV	1640	57	.01	.00	.01	0.	*	15	NOV	0510	207	.00	.00	.00	0.
14	NOV	1645	58	.01	.00	.01	0.	*	15	NOV	0515	208	.00	.00	.00	0.
14	NOV	1650	59	.01	.00	.01	0.	*	15	NOV	0520	209	.00	.00	.00	0.
14	NOV	1655	60	.01	.00	.00	0.	*	15	NOV	0525	210	.00	.00	.00	0.
14	NOV	1700	61	.01	.00	.00	0.	*	15	NOV	0530	211	.00	.00	.00	0.
14	NOV	1705	62	.01	.00	.00	0.	*	15	NOV	0535	212	.00	.00	.00	0.
14	NOV	1710	63	.01	.00	.00	0.	*	15	NOV	0540	213	.00	.00	.00	0.
14	NOV	1715	64	.01	.00	.00	0.	*	15	NOV	0545	214	.00	.00	.00	0.
14	NOV	1720	65	.01	.00	.00	0.	*	15	NOV	0550	215	.00	.00	.00	0.
14	NOV	1725	66	.01	.00	.00	0.	*	15	NOV	0555	216	.00	.00	.00	0.
14	NOV	1730	67	.01	.00	.00	0.	*	15	NOV	0600	217	.00	.00	.00	0.
14	NOV	1735	68	.01	.00	.00	0.	*	15	NOV	0605	218	.00	.00	.00	0.
14	NOV	1740	69	.01	.00	.00	0.	*	15	NOV	0610	219	.00	.00	.00	0.
14	NOV	1745	70	.01	.00	.00	0.	*	15	NOV	0615	220	.00	.00	.00	0.
14	NOV	1750	71	.00	.00	.00	0.	*	15	NOV	0620	221	.00	.00	.00	0.
14	NOV	1755	72	.00	.00	.00	0.	*	15	NOV	0625	222	.00	.00	.00	0.
14	NOV	1800	73	.00	.00	.00	0.	*	15	NOV	0630	223	.00	.00	.00	0.
14	NOV	1805	74	.00	.00	.00	0.	*	15	NOV	0635	224	.00	.00	.00	0.
14	NOV	1810	75	.00	.00	.00	0.	*	15	NOV	0640	225	.00	.00	.00	0.
14	NOV	1815	76	.00	.00	.00	0.	*	15	NOV	0645	226	.00	.00	.00	0.
14	NOV	1820	77	.00	.00	.00	0.	*	15	NOV	0650	227	.00	.00	.00	0.
14	NOV	1825	78	.00	.00	.00	0.	*	15	NOV	0655	228	.00	.00	.00	0.
14	NOV	1830	79	.00	.00	.00	0.	*	15	NOV	0700	229	.00	.00	.00	0.
14	NOV	1835	80	.00	.00	.00	0.	*	15	NOV	0705	230	.00	.00	.00	0.
14	NOV	1840	81	.00	.00	.00	0.	*	15	NOV	0710	231	.00	.00	.00	0.
14	NOV	1845	82	.00	.00	.00	0.	*	15	NOV	0715	232	.00	.00	.00	0.
14	NOV	1850	83	.00	.00	.00	0.	*	15	NOV	0720	233	.00	.00	.00	0.
14	NOV	1855	84	.00	.00	.00	0.	*	15	NOV	0725	234	.00	.00	.00	0.
14	NOV	1900	85	.00	.00	.00	0.	*	15	NOV	0730	235	.00	.00	.00	0.
14	NOV	1905	86	.00	.00	.00	0.	*	15	NOV	0735	236	.00	.00	.00	0.
14	NOV	1910	87	.00	.00	.00	0.	*	15	NOV	0740	237	.00	.00	.00	0.
14	NOV	1915	88	.00	.00	.00	0.	*	15	NOV	0745	238	.00	.00	.00	0.
14	NOV	1920	89	.00	.00	.00	0.	*	15	NOV	0750	239	.00	.00	.00	0.
14	NOV	1925	90	.00	.00	.00	0.	*	15	NOV	0755	240	.00	.00	.00	0.
14	NOV	1930	91	.00	.00	.00	0.	*	15	NOV	0800	241	.00	.00	.00	0.
14	NOV	1935	92	.00	.00	.00	0.	*	15	NOV	0805	242	.00	.00	.00	0.
14	NOV	1940	93	.00	.00	.00	0.	*	15	NOV	0810	243	.00	.00	.00	0.
14	NOV	1945	94	.00	.00	.00	0.	*	15	NOV	0815	244	.00	.00	.00	0.
14	NOV	1950	95	.00	.00	.00	0.	*	15	NOV	0820	245	.00	.00	.00	0.
14	NOV	1955	96	.00	.00	.00	0.	*	15	NOV	0825	246	.00	.00	.00	0.
14	NOV	2000	97	.00	.00	.00	0.	*	15	NOV	0830	247	.00	.00	.00	0.
14	NOV	2005	98	.00	.00	.00	0.	*	15	NOV	0835	248	.00	.00	.00	0.
14	NOV	2010	99	.00	.00	.00	0.	*	15	NOV	0840	249	.00	.00	.00	0.
14	NOV	2015	100	.00	.00	.00	0.	*	15	NOV	0845	250	.00	.00	.00	0.
14	NOV	2020	101	.00	.00	.00	0.	*	15	NOV	0850	251	.00	.00	.00	0.
14	NOV	2025	102	.00	.00	.00	0.	*	15	NOV	0855	252	.00	.00	.00	0.
14	NOV	2030	103	.00	.00	.00	0.	*	15	NOV	0900	253	.00	.00	.00	0.
14	NOV	2035	104	.00	.00	.00	0.	*	15	NOV	0905	254	.00	.00	.00	0.
14	NOV	2040	105	.00	.00	.00	0.	*	15	NOV	0910	255	.00	.00	.00	0.
14	NOV	2045	106	.00	.00	.00	0.	*	15	NOV	0915	256	.00	.00	.00	0.
14	NOV	2050	107	.00	.00	.00	0.	*	15	NOV	0920	257	.00	.00	.00	0.
14	NOV	2055	108	.00	.00	.00	0.	*	15	NOV	0925	258	.00	.00	.00	0.
14	NOV	2100	109	.00	.00	.00	0.	*	15	NOV	0930	259	.00	.00	.00	0.
14	NOV	2105	110	.00	.00	.00	0.	*	15	NOV	0935	260	.00	.00	.00	0.
14	NOV	2110	111	.00	.00	.00	0.	*	15	NOV	0940	261	.00	.00	.00	0.
14	NOV	2115	112	.00	.00	.00	0.	*	15	NOV	0945	262	.00	.00	.00	0.
14	NOV	2120	113	.00	.00	.00	0.	*	15	NOV	0950	263	.00	.00	.00	0.
14	NOV	2125	114	.00	.00	.00	0.	*	15	NOV	0955	264	.00	.00	.00	0.
14	NOV	2130	115	.00	.00	.00	0.	*	15	NOV	1000	265	.00	.00	.00	0.
14	NOV	2135	116	.00	.00	.00	0.	*	15	NOV	1005	266	.00	.00	.00	0.
14	NOV	2140	117	.00	.00	.00	0.	*	15	NOV	1010	267	.00	.00	.00	0.
14	NOV	2145	118	.00	.00	.00	0.	*	15	NOV	1015	268	.00	.00	.00	0.
14	NOV	2150	119	.00	.00	.00	0.	*	15	NOV	1020	269	.00	.00	.00	0.
14	NOV	2155	120	.00	.00	.00	0.	*	15	NOV	1025	270	.00	.00	.00	0.
14	NOV	2200	121	.00	.00	.00	0.	*	15	NOV	1030	271	.00	.00	.00	0.
14	NOV	2205	122	.00	.00	.00	0.	*	15	NOV	1035	272	.00	.00	.00	0.
14	NOV	2210	123	.00	.00	.00	0.	*	15	NOV	1040	273	.00	.00	.00	0.
14	NOV	2215	124	.00	.00	.00	0.	*	15	NOV	1045	274	.00	.00	.00	0.
14	NOV	2220	125	.00	.00	.00	0.	*	15	NOV	1050	275	.00	.00	.00	0.
14	NOV	2225	126	.00	.00	.00	0.	*	15	NOV	1055	276	.00	.00	.00	0.
14	NOV	2230	127	.00	.00	.00	0.	*	15	NOV	1100	277	.00	.00	.00	0.
14	NOV	2235	128	.00	.00	.00	0.	*	15	NOV	1105	278	.00	.00	.00	0.
14	NOV	2240	129	.00	.00	.00	0.	*	15	NOV	1110	279	.00	.00	.00	0.
14	NOV	2245	130	.00	.00	.00	0.	*	15	NOV	1115	280	.00	.00	.00	0.
14	NOV	2250	131	.00	.00	.00	0.	*	15	NOV	1120	281	.00	.00	.00	0.
14	NOV	2255	132	.00	.00	.00	0.	*	15	NOV	1125	282	.00	.00	.00	0.
14	NOV	2300	133	.00	.00	.00	0.	*	15	NOV	1130	283	.00	.00	.00	0.
14	NOV	2305	134	.00	.00	.00	0.	*	15	NOV	1135	284	.00	.00	.00	0.
14	NOV	2310	135	.00	.00	.00	0.	*	15	NOV	1140	285	.00	.00	.00	0.
14	NOV	2315	136	.00	.00	.00	0.	*	15	NOV	1145	286	.00	.00	.00	0.
14	NOV	2320	137	.00	.00	.00	0.	*	15	NOV	1150	287	.00	.00	.00	0.
14	NOV	2325	138	.00	.00	.00	0.	*	15	NOV	1155	288	.00	.00	.00	0.
14	NOV	2330	139	.00	.00	.00	0.	*	15	NOV	1200	289	.00	.00	.00	0.
14	NOV	2335	140	.00	.00	.00	0.	*	15	NOV	1205	290	.00	.00	.00	0.
14	NOV	2340	141	.00	.00	.00	0.	*	15	NOV	1210	291	.00	.00	.00	0.
14	NOV	2345	142	.00	.00	.00	0.	*	15	NOV	1215	292	.00	.00	.00	0.
14	NOV	2350	143	.00	.00	.00	0.	*	15	NOV	1220	293	.00	.00	.00	0.
14	NOV	2355	144	.00	.00	.00	0.	*	15	NOV	1225	294	.00	.00	.00	0.
15	NOV	0000	145	.00	.00	.00	0.	*	15	NOV	1230	295	.00	.00	.00	0.
15	NOV	0005	146	.00	.00	.00	0.	*	15	NOV	1235	296	.00	.00	.00	0.
15	NOV	0010	147	.00	.00	.00	0.	*	15	NOV	1240	297	.00	.00	.00	0.
15	NOV	0015	148	.00	.00	.00	0.	*	15	NOV	1245	298	.00	.00	.00	0.
15	NOV	0020	149	.00	.00	.00	0.	*	15	NOV	1250	299	.00	.00	.00	0.
15	NOV	0025	150	.00	.00	.00	0.	*	15	NOV	1255	300	.00	.00	.00	0.

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TOTAL RAINFALL = 2.01, TOTAL LOSS = .94, TOTAL EXCESS = 1.07

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW (CFS) 6-HR	24-HR	72-HR	24.92-HR
11.	3.08	1.	0.	0.	0.

(INCHES)	1.067	1.069	1.069	1.069
(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .01 SQ MI

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          *             *
17 KK     *     RESVR   *
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ROUTE OUTLET HYDROGRAPH THROUGH RETENTION BASINS

HYDROGRAPH ROUTING DATA

19 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

20 SA	AREA	.0	.0	.1	.1	.2	.3
21 SE	ELEVATION	2267.00	2268.00	2269.00	2270.00	2271.00	2272.00
22 SQ	DISCHARGE	0.	4.	7.	11.	15.	19.

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COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.01	.06	.16	.32	.59
ELEVATION	2267.00	2268.00	2269.00	2270.00	2271.00	2272.00

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HYDROGRAPH AT STATION RESVR

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
14	NOV	1200	1	0.	.0	2267.0	14	NOV	2020	101	0.	.0	2267.0	15	NOV	0440	201	0.	.0	2267.0
14	NOV	1205	2	0.	.0	2267.0	14	NOV	2025	102	0.	.0	2267.0	15	NOV	0445	202	0.	.0	2267.0
14	NOV	1210	3	0.	.0	2267.0	14	NOV	2030	103	0.	.0	2267.0	15	NOV	0450	203	0.	.0	2267.0
14	NOV	1215	4	0.	.0	2267.0	14	NOV	2035	104	0.	.0	2267.0	15	NOV	0455	204	0.	.0	2267.0
14	NOV	1220	5	0.	.0	2267.0	14	NOV	2040	105	0.	.0	2267.0	15	NOV	0500	205	0.	.0	2267.0
14	NOV	1225	6	0.	.0	2267.0	14	NOV	2045	106	0.	.0	2267.0	15	NOV	0505	206	0.	.0	2267.0
14	NOV	1230	7	0.	.0	2267.0	14	NOV	2050	107	0.	.0	2267.0	15	NOV	0510	207	0.	.0	2267.0
14	NOV	1235	8	0.	.0	2267.0	14	NOV	2055	108	0.	.0	2267.0	15	NOV	0515	208	0.	.0	2267.0
14	NOV	1240	9	0.	.0	2267.0	14	NOV	2100	109	0.	.0	2267.0	15	NOV	0520	209	0.	.0	2267.0
14	NOV	1245	10	0.	.0	2267.0	14	NOV	2105	110	0.	.0	2267.0	15	NOV	0525	210	0.	.0	2267.0
14	NOV	1250	11	0.	.0	2267.0	14	NOV	2110	111	0.	.0	2267.0	15	NOV	0530	211	0.	.0	2267.0
14	NOV	1255	12	0.	.0	2267.0	14	NOV	2115	112	0.	.0	2267.0	15	NOV	0535	212	0.	.0	2267.0
14	NOV	1300	13	0.	.0	2267.0	14	NOV	2120	113	0.	.0	2267.0	15	NOV	0540	213	0.	.0	2267.0
14	NOV	1305	14	0.	.0	2267.0	14	NOV	2125	114	0.	.0	2267.0	15	NOV	0545	214	0.	.0	2267.0
14	NOV	1310	15	0.	.0	2267.0	14	NOV	2130	115	0.	.0	2267.0	15	NOV	0550	215	0.	.0	2267.0
14	NOV	1315	16	0.	.0	2267.0	14	NOV	2135	116	0.	.0	2267.0	15	NOV	0555	216	0.	.0	2267.0
14	NOV	1320	17	0.	.0	2267.0	14	NOV	2140	117	0.	.0	2267.0	15	NOV	0600	217	0.	.0	2267.0
14	NOV	1325	18	0.	.0	2267.0	14	NOV	2145	118	0.	.0	2267.0	15	NOV	0605	218	0.	.0	2267.0
14	NOV	1330	19	0.	.0	2267.0	14	NOV	2150	119	0.	.0	2267.0	15	NOV	0610	219	0.	.0	2267.0
14	NOV	1335	20	0.	.0	2267.0	14	NOV	2155	120	0.	.0	2267.0	15	NOV	0615	220	0.	.0	2267.0
14	NOV	1340	21	0.	.0	2267.0	14	NOV	2200	121	0.	.0	2267.0	15	NOV	0620	221	0.	.0	2267.0
14	NOV	1345	22	0.	.0	2267.1	14	NOV	2205	122	0.	.0	2267.0	15	NOV	0625	222	0.	.0	2267.0
14	NOV	1350	23	0.	.0	2267.1	14	NOV	2210	123	0.	.0	2267.0	15	NOV	0630	223	0.	.0	2267.0
14	NOV	1355	24	0.	.0	2267.1	14	NOV	2215	124	0.	.0	2267.0	15	NOV	0635	224	0.	.0	2267.0
14	NOV	1400	25	0.	.0	2267.1	14	NOV	2220	125	0.	.0	2267.0	15	NOV	0640	225	0.	.0	2267.0
14	NOV	1405	26	0.	.0	2267.1	14	NOV	2225	126	0.	.0	2267.0	15	NOV	0645	226	0.	.0	2267.0
14	NOV	1410	27	0.	.0	2267.1	14	NOV	2230	127	0.	.0	2267.0	15	NOV	0650	227	0.	.0	2267.0
14	NOV	1415	28	0.	.0	2267.1	14	NOV	2235	128	0.	.0	2267.0	15	NOV	0655	228	0.	.0	2267.0
14	NOV	1420	29	0.	.0	2267.1	14	NOV	2240	129	0.	.0	2267.0	15	NOV	0700	229	0.	.0	2267.0
14	NOV	1425	30	0.	.0	2267.1	14	NOV	2245	130	0.	.0	2267.0	15	NOV	0705	230	0.	.0	2267.0
14	NOV	1430	31	0.	.0	2267.1	14	NOV	2250	131	0.	.0	2267.0	15	NOV	0710	231	0.	.0	2267.0
14	NOV	1435	32	1.	.0	2267.1	14	NOV	2255	132	0.	.0	2267.0	15	NOV	0715	232	0.	.0	2267.0
14	NOV	1440	33	1.	.0	2267.2	14	NOV	2300	133	0.	.0	2267.0	15	NOV	0720	233	0.	.0	2267.0
14	NOV	1445	34	1.	.0	2267.3	14	NOV	2305	134	0.	.0	2267.0	15	NOV	0725	234	0.	.0	2267.0
14	NOV	1450	35	1.	.0	2267.3	14	NOV	2310	135	0.	.0	2267.0	15	NOV	0730	235	0.	.0	2267.0
14	NOV	1455	36	2.	.0	2267.5	14	NOV	2315	136	0.	.0	2267.0	15	NOV	0735	236	0.	.0	2267.0
14	NOV	1500	37	3.	.0	2267.8	14	NOV	2320	137	0.	.0	2267.0	15	NOV	0740	237	0.	.0	2267.0
14	NOV	1505	38	5.	.0	2268.4	14	NOV	2325	138	0.	.0	2267.0	15	NOV	0745	238	0.	.0	2267.0
14	NOV	1510	39	7.	.1	2268.9	14	NOV	2330	139	0.	.0	2267.0	15	NOV	0750	239	0.	.0	2267.0
14	NOV	1515	40	7.	.1	2268.9	14	NOV	2335	140	0.	.0	2267.0	15	NOV	0755	240	0.	.0	2267.0
14	NOV	1520	41	6.	.0	2268.6	14	NOV	2340	141	0.	.0	2267.0	15	NOV	0800	241	0.	.0	2267.0
14	NOV	1525	42	5.	.0	2268.2	14	NOV	2345	142	0.	.0	2267.0	15	NOV	0805	242	0.	.0	2267.0
14	NOV	1530	43	3.	.0	2267.9	14	NOV	2350	143	0.	.0	2267.0	15	NOV	0810	243	0.	.0	2267.0
14	NOV	1535	44	2.	.0	2267.4	14	NOV	2355	144	0.	.0	2267.0	15	NOV	0815	244	0.	.0	2267.0
14	NOV	1540	45	1.	.0	2267.3	15	NOV	0000	145	0.	.0	2267.0	15	NOV	0820	245	0.	.0	2267.0
14	NOV	1545	46	1.	.0	2267.2	15	NOV	0005	146	0.	.0	2267.0	15	NOV	0825	246	0.	.0	2267.0
14	NOV	1550	47	1.	.0	2267.2	15	NOV	0010	147	0.	.0	2267.0	15	NOV	0830	247	0.	.0	2267.0
14	NOV	1555	48	1.	.0	2267.1	15	NOV	0015	148	0.	.0	2267.0	15	NOV	0835	248	0.	.0	2267.0
14	NOV	1600	49	0.	.0	2267.1	15	NOV	0020	149	0.	.0	2267.0	15	NOV	0840	249	0.	.0	2267.0
14	NOV	1605	50	0.	.0	2267.1	15	NOV	0025	150	0.	.0	2267.0	15	NOV	0845	250	0.	.0	2267.0
14	NOV	1610	51	0.	.0	2267.1	15	NOV	0030	151	0.	.0	2267.0	15	NOV	0850	251	0.	.0	2267.0
14	NOV	1615	52	0.	.0	2267.1	15	NOV	0035	152	0.	.0	2267.0	15	NOV	0855	252	0.	.0	2267.0
14	NOV	1620	53	0.	.0	2267.1	15	NOV	0040	153	0.	.0	2267.0	15	NOV	0900	253	0.	.0	2267.0
14	NOV	1625	54	0.	.0	2267.1	15	NOV	0045	154	0.	.0	2267.0	15	NOV	0905	254	0.	.0	2267.0
14	NOV	1630	55	0.	.0	2267.1	15	NOV	0050	155	0.	.0	2267.0	15	NOV	0910	255	0.	.0	2267.0
14	NOV	1635	56	0.	.0	2267.1	15	NOV	0055	156	0.	.0	2267.0	15	NOV	0915	256	0.	.0	2267.0
14	NOV	1640	57	0.	.0	2267.1	15	NOV	0100	157	0.	.0	2267.0	15	NOV	0920	257	0.	.0	2267.0
14	NOV	1645	58	0.	.0	2267.1	15	NOV	0105	158	0.	.0	2267.0	15	NOV	0925	258	0.	.0	2267.0
14	NOV	1650	59	0.	.0	2267.1	15	NOV	0110	159	0.	.0	2267.0	15	NOV	0930	259	0.	.0	2267.0

14	NOV	1655	60	0.	.0	2267.1	*	15	NOV	0115	160	0.	.0	2267.0	*	15	NOV	0935	260	0.	.0	2267.0
14	NOV	1700	61	0.	.0	2267.1	*	15	NOV	0120	161	0.	.0	2267.0	*	15	NOV	0940	261	0.	.0	2267.0
14	NOV	1705	62	0.	.0	2267.1	*	15	NOV	0125	162	0.	.0	2267.0	*	15	NOV	0945	262	0.	.0	2267.0
14	NOV	1710	63	0.	.0	2267.1	*	15	NOV	0130	163	0.	.0	2267.0	*	15	NOV	0950	263	0.	.0	2267.0
14	NOV	1715	64	0.	.0	2267.1	*	15	NOV	0135	164	0.	.0	2267.0	*	15	NOV	0955	264	0.	.0	2267.0
14	NOV	1720	65	0.	.0	2267.1	*	15	NOV	0140	165	0.	.0	2267.0	*	15	NOV	1000	265	0.	.0	2267.0
14	NOV	1725	66	0.	.0	2267.1	*	15	NOV	0145	166	0.	.0	2267.0	*	15	NOV	1005	266	0.	.0	2267.0
14	NOV	1730	67	0.	.0	2267.1	*	15	NOV	0150	167	0.	.0	2267.0	*	15	NOV	1010	267	0.	.0	2267.0
14	NOV	1735	68	0.	.0	2267.1	*	15	NOV	0155	168	0.	.0	2267.0	*	15	NOV	1015	268	0.	.0	2267.0
14	NOV	1740	69	0.	.0	2267.1	*	15	NOV	0200	169	0.	.0	2267.0	*	15	NOV	1020	269	0.	.0	2267.0
14	NOV	1745	70	0.	.0	2267.1	*	15	NOV	0205	170	0.	.0	2267.0	*	15	NOV	1025	270	0.	.0	2267.0
14	NOV	1750	71	0.	.0	2267.1	*	15	NOV	0210	171	0.	.0	2267.0	*	15	NOV	1030	271	0.	.0	2267.0
14	NOV	1755	72	0.	.0	2267.1	*	15	NOV	0215	172	0.	.0	2267.0	*	15	NOV	1035	272	0.	.0	2267.0
14	NOV	1800	73	0.	.0	2267.1	*	15	NOV	0220	173	0.	.0	2267.0	*	15	NOV	1040	273	0.	.0	2267.0
14	NOV	1805	74	0.	.0	2267.0	*	15	NOV	0225	174	0.	.0	2267.0	*	15	NOV	1045	274	0.	.0	2267.0
14	NOV	1810	75	0.	.0	2267.0	*	15	NOV	0230	175	0.	.0	2267.0	*	15	NOV	1050	275	0.	.0	2267.0
14	NOV	1815	76	0.	.0	2267.0	*	15	NOV	0235	176	0.	.0	2267.0	*	15	NOV	1055	276	0.	.0	2267.0
14	NOV	1820	77	0.	.0	2267.0	*	15	NOV	0240	177	0.	.0	2267.0	*	15	NOV	1100	277	0.	.0	2267.0
14	NOV	1825	78	0.	.0	2267.0	*	15	NOV	0245	178	0.	.0	2267.0	*	15	NOV	1105	278	0.	.0	2267.0
14	NOV	1830	79	0.	.0	2267.0	*	15	NOV	0250	179	0.	.0	2267.0	*	15	NOV	1110	279	0.	.0	2267.0
14	NOV	1835	80	0.	.0	2267.0	*	15	NOV	0255	180	0.	.0	2267.0	*	15	NOV	1115	280	0.	.0	2267.0
14	NOV	1840	81	0.	.0	2267.0	*	15	NOV	0300	181	0.	.0	2267.0	*	15	NOV	1120	281	0.	.0	2267.0
14	NOV	1845	82	0.	.0	2267.0	*	15	NOV	0305	182	0.	.0	2267.0	*	15	NOV	1125	282	0.	.0	2267.0
14	NOV	1850	83	0.	.0	2267.0	*	15	NOV	0310	183	0.	.0	2267.0	*	15	NOV	1130	283	0.	.0	2267.0
14	NOV	1855	84	0.	.0	2267.0	*	15	NOV	0315	184	0.	.0	2267.0	*	15	NOV	1135	284	0.	.0	2267.0
14	NOV	1900	85	0.	.0	2267.0	*	15	NOV	0320	185	0.	.0	2267.0	*	15	NOV	1140	285	0.	.0	2267.0
14	NOV	1905	86	0.	.0	2267.0	*	15	NOV	0325	186	0.	.0	2267.0	*	15	NOV	1145	286	0.	.0	2267.0
14	NOV	1910	87	0.	.0	2267.0	*	15	NOV	0330	187	0.	.0	2267.0	*	15	NOV	1150	287	0.	.0	2267.0
14	NOV	1915	88	0.	.0	2267.0	*	15	NOV	0335	188	0.	.0	2267.0	*	15	NOV	1155	288	0.	.0	2267.0
14	NOV	1920	89	0.	.0	2267.0	*	15	NOV	0340	189	0.	.0	2267.0	*	15	NOV	1200	289	0.	.0	2267.0
14	NOV	1925	90	0.	.0	2267.0	*	15	NOV	0345	190	0.	.0	2267.0	*	15	NOV	1205	290	0.	.0	2267.0
14	NOV	1930	91	0.	.0	2267.0	*	15	NOV	0350	191	0.	.0	2267.0	*	15	NOV	1210	291	0.	.0	2267.0
14	NOV	1935	92	0.	.0	2267.0	*	15	NOV	0355	192	0.	.0	2267.0	*	15	NOV	1215	292	0.	.0	2267.0
14	NOV	1940	93	0.	.0	2267.0	*	15	NOV	0400	193	0.	.0	2267.0	*	15	NOV	1220	293	0.	.0	2267.0
14	NOV	1945	94	0.	.0	2267.0	*	15	NOV	0405	194	0.	.0	2267.0	*	15	NOV	1225	294	0.	.0	2267.0
14	NOV	1950	95	0.	.0	2267.0	*	15	NOV	0410	195	0.	.0	2267.0	*	15	NOV	1230	295	0.	.0	2267.0
14	NOV	1955	96	0.	.0	2267.0	*	15	NOV	0415	196	0.	.0	2267.0	*	15	NOV	1235	296	0.	.0	2267.0
14	NOV	2000	97	0.	.0	2267.0	*	15	NOV	0420	197	0.	.0	2267.0	*	15	NOV	1240	297	0.	.0	2267.0
14	NOV	2005	98	0.	.0	2267.0	*	15	NOV	0425	198	0.	.0	2267.0	*	15	NOV	1245	298	0.	.0	2267.0
14	NOV	2010	99	0.	.0	2267.0	*	15	NOV	0430	199	0.	.0	2267.0	*	15	NOV	1250	299	0.	.0	2267.0
14	NOV	2015	100	0.	.0	2267.0	*	15	NOV	0435	200	0.	.0	2267.0	*	15	NOV	1255	300	0.	.0	2267.0

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 7.	3.17		1.	0.	0.	0.
		(INCHES)	1.067	1.069	1.069	1.069
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
0.	3.17	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2268.95	3.17	2267.22	2267.06	2267.05	2267.05

CUMULATIVE AREA = .01 SQ MI

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	S-2	11.	3.08	1.	0.	0.	.01		
+	ROUTED TO	RESVR	7.	3.17	1.	0.	0.	.01		
+									2268.95	3.17

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

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   24NOV02  TIME  03:37:45   *
*                                       *
*****************************************
```

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

1 HEC-1 INPUT PAGE 1

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

            1           ID        DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
            2           ID        COS NO. 88-PA-2001
            3           ID        HEC ENGINEERING JOB NO. 5843
            4           ID        QS #51-48
            5           ID
            6           ID        THIS HEC-1 RUN IS FOR THE PROPOSED CONDITION OF WASH B
            7           ID        USE SCS METHOD
            8           ID        THIS IS FOR THE 100-YR, 6-HR STORM EVENT
            9           ID
           10           IT       5 14NOV01    1200     300

           11           KK     S-2
           12           KM       RUNOFF FROM SUB BASINS 2A AND 2B
           13           BA  0.0071
           14           PH       50            0.88    1.61    2.60    2.91    3.11    3.50
           15           LS        0      77   39.71
           16           UD   0.060

           17           KK    RESVR
           18           KM       ROUTE OUTLET HYDROGRAPH THROUGH RETENTION BASINS
           19           RS        1    STOR      0
           20           SA    0.002    0.03    0.07    0.13    0.20    0.34
           21           SE     2267    2268    2269    2270    2271    2272
           22           SQ        0     3.7     7.4    11.1    14.8    18.5
           23           ZZ
```


```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   24NOV02  TIME  03:37:45   *
*                                       *
*****************************************
```

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


DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
COS NO. 88-PA-2001
HEC ENGINEERING JOB NO. 5843
QS #51-48

THIS HEC-1 RUN IS FOR THE PROPOSED CONDITION OF WASH B
USE SCS METHOD
THIS IS FOR THE 100-YR, 6-HR STORM EVENT

```
IT          HYDROGRAPH TIME DATA
                  NMIN          5  MINUTES IN COMPUTATION INTERVAL
                 IDATE     14NOV 1  STARTING DATE
                 ITIME        1200  STARTING TIME
                    NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE     15NOV 1  ENDING DATE
                NDTIME        1255  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

*** ***

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          **************
          *            *
11 KK     *     S-2    *
          *            *
          **************
```

RUNOFF FROM SUB BASINS 2A AND 2B

SUBBASIN RUNOFF DATA

13 BA SUBBASIN CHARACTERISTICS
TAREA .01 SUBBASIN AREA

PRECIPITATION DATA

14 PH DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.88	1.61	2.60	2.91	3.11	3.50	.00	.00	.00	.00	.00	.00

STORM AREA = .01

15 LS SCS LOSS RATE
STRTL .60 INITIAL ABSTRACTION
CRVNBR 77.00 CURVE NUMBER
RTIMP 39.71 PERCENT IMPERVIOUS AREA

16 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .06 LAG

***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
6 END-OF-PERIOD ORDINATES
31. 17. 5. 1. 0. 0.

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HYDROGRAPH AT STATION S-2

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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
14	NOV	1200	1	.00	.00	.00	0.	15	NOV	0030	151	.00	.00	.00	0.
14	NOV	1205	2	.01	.00	.00	0.	15	NOV	0035	152	.00	.00	.00	0.
14	NOV	1210	3	.01	.00	.00	0.	15	NOV	0040	153	.00	.00	.00	0.
14	NOV	1215	4	.01	.00	.00	0.	15	NOV	0045	154	.00	.00	.00	0.
14	NOV	1220	5	.01	.00	.00	0.	15	NOV	0050	155	.00	.00	.00	0.
14	NOV	1225	6	.01	.00	.00	0.	15	NOV	0055	156	.00	.00	.00	0.
14	NOV	1230	7	.01	.01	.00	0.	15	NOV	0100	157	.00	.00	.00	0.
14	NOV	1235	8	.01	.01	.00	0.	15	NOV	0105	158	.00	.00	.00	0.
14	NOV	1240	9	.01	.01	.00	0.	15	NOV	0110	159	.00	.00	.00	0.
14	NOV	1245	10	.01	.01	.00	0.	15	NOV	0115	160	.00	.00	.00	0.
14	NOV	1250	11	.01	.01	.00	0.	15	NOV	0120	161	.00	.00	.00	0.
14	NOV	1255	12	.01	.01	.00	0.	15	NOV	0125	162	.00	.00	.00	0.
14	NOV	1300	13	.01	.01	.00	0.	15	NOV	0130	163	.00	.00	.00	0.
14	NOV	1305	14	.01	.01	.00	0.	15	NOV	0135	164	.00	.00	.00	0.
14	NOV	1310	15	.01	.01	.00	0.	15	NOV	0140	165	.00	.00	.00	0.
14	NOV	1315	16	.01	.01	.00	0.	15	NOV	0145	166	.00	.00	.00	0.
14	NOV	1320	17	.01	.01	.00	0.	15	NOV	0150	167	.00	.00	.00	0.
14	NOV	1325	18	.01	.01	.00	0.	15	NOV	0155	168	.00	.00	.00	0.
14	NOV	1330	19	.01	.01	.00	0.	15	NOV	0200	169	.00	.00	.00	0.
14	NOV	1335	20	.01	.01	.01	0.	15	NOV	0205	170	.00	.00	.00	0.
14	NOV	1340	21	.01	.01	.01	0.	15	NOV	0210	171	.00	.00	.00	0.
14	NOV	1345	22	.01	.01	.01	0.	15	NOV	0215	172	.00	.00	.00	0.
14	NOV	1350	23	.01	.01	.01	0.	15	NOV	0220	173	.00	.00	.00	0.
14	NOV	1355	24	.02	.01	.01	0.	15	NOV	0225	174	.00	.00	.00	0.
14	NOV	1400	25	.02	.01	.01	0.	15	NOV	0230	175	.00	.00	.00	0.
14	NOV	1405	26	.02	.01	.01	0.	15	NOV	0235	176	.00	.00	.00	0.
14	NOV	1410	27	.02	.01	.01	0.	15	NOV	0240	177	.00	.00	.00	0.
14	NOV	1415	28	.02	.01	.01	0.	15	NOV	0245	178	.00	.00	.00	0.
14	NOV	1420	29	.02	.01	.01	0.	15	NOV	0250	179	.00	.00	.00	0.
14	NOV	1425	30	.03	.02	.01	1.	15	NOV	0255	180	.00	.00	.00	0.
14	NOV	1430	31	.03	.02	.01	1.	15	NOV	0300	181	.00	.00	.00	0.
14	NOV	1435	32	.06	.04	.02	1.	15	NOV	0305	182	.00	.00	.00	0.
14	NOV	1440	33	.07	.04	.03	1.	15	NOV	0310	183	.00	.00	.00	0.
14	NOV	1445	34	.08	.05	.03	2.	15	NOV	0315	184	.00	.00	.00	0.
14	NOV	1450	35	.12	.07	.05	2.	15	NOV	0320	185	.00	.00	.00	0.
14	NOV	1455	36	.16	.09	.08	4.	15	NOV	0325	186	.00	.00	.00	0.
14	NOV	1500	37	.38	.17	.21	8.	15	NOV	0330	187	.00	.00	.00	0.
14	NOV	1505	38	.77	.26	.52	20.	15	NOV	0335	188	.00	.00	.00	0.
14	NOV	1510	39	.26	.07	.20	16.	15	NOV	0340	189	.00	.00	.00	0.
14	NOV	1515	40	.14	.03	.11	9.	15	NOV	0345	190	.00	.00	.00	0.
14	NOV	1520	41	.09	.02	.07	6.	15	NOV	0350	191	.00	.00	.00	0.
14	NOV	1525	42	.08	.02	.06	4.	15	NOV	0355	192	.00	.00	.00	0.
14	NOV	1530	43	.07	.01	.05	3.	15	NOV	0400	193	.00	.00	.00	0.
14	NOV	1535	44	.03	.01	.02	2.	15	NOV	0405	194	.00	.00	.00	0.
14	NOV	1540	45	.03	.01	.02	1.	15	NOV	0410	195	.00	.00	.00	0.
14	NOV	1545	46	.02	.00	.02	1.	15	NOV	0415	196	.00	.00	.00	0.
14	NOV	1550	47	.02	.00	.02	1.	15	NOV	0420	197	.00	.00	.00	0.
14	NOV	1555	48	.02	.00	.02	1.	15	NOV	0425	198	.00	.00	.00	0.
14	NOV	1600	49	.02	.00	.01	1.	15	NOV	0430	199	.00	.00	.00	0.
14	NOV	1605	50	.02	.00	.01	1.	15	NOV	0435	200	.00	.00	.00	0.
14	NOV	1610	51	.02	.00	.01	1.	15	NOV	0440	201	.00	.00	.00	0.
14	NOV	1615	52	.02	.00	.01	1.	15	NOV	0445	202	.00	.00	.00	0.
14	NOV	1620	53	.01	.00	.01	1.	15	NOV	0450	203	.00	.00	.00	0.
14	NOV	1625	54	.01	.00	.01	1.	15	NOV	0455	204	.00	.00	.00	0.

14	NOV	1630	55	.01	.00	.01	1.	*	15	NOV	0500	205	.00	.00	.00	0.
14	NOV	1635	56	.01	.00	.01	1.	*	15	NOV	0505	206	.00	.00	.00	0.
14	NOV	1640	57	.01	.00	.01	1.	*	15	NOV	0510	207	.00	.00	.00	0.
14	NOV	1645	58	.01	.00	.01	1.	*	15	NOV	0515	208	.00	.00	.00	0.
14	NOV	1650	59	.01	.00	.01	1.	*	15	NOV	0520	209	.00	.00	.00	0.
14	NOV	1655	60	.01	.00	.01	0.	*	15	NOV	0525	210	.00	.00	.00	0.
14	NOV	1700	61	.01	.00	.01	0.	*	15	NOV	0530	211	.00	.00	.00	0.
14	NOV	1705	62	.01	.00	.01	0.	*	15	NOV	0535	212	.00	.00	.00	0.
14	NOV	1710	63	.01	.00	.01	0.	*	15	NOV	0540	213	.00	.00	.00	0.
14	NOV	1715	64	.01	.00	.01	0.	*	15	NOV	0545	214	.00	.00	.00	0.
14	NOV	1720	65	.01	.00	.01	0.	*	15	NOV	0550	215	.00	.00	.00	0.
14	NOV	1725	66	.01	.00	.01	0.	*	15	NOV	0555	216	.00	.00	.00	0.
14	NOV	1730	67	.01	.00	.01	0.	*	15	NOV	0600	217	.00	.00	.00	0.
14	NOV	1735	68	.01	.00	.01	0.	*	15	NOV	0605	218	.00	.00	.00	0.
14	NOV	1740	69	.01	.00	.01	0.	*	15	NOV	0610	219	.00	.00	.00	0.
14	NOV	1745	70	.01	.00	.01	0.	*	15	NOV	0615	220	.00	.00	.00	0.
14	NOV	1750	71	.01	.00	.01	0.	*	15	NOV	0620	221	.00	.00	.00	0.
14	NOV	1755	72	.01	.00	.01	0.	*	15	NOV	0625	222	.00	.00	.00	0.
14	NOV	1800	73	.01	.00	.01	0.	*	15	NOV	0630	223	.00	.00	.00	0.
14	NOV	1805	74	.00	.00	.00	0.	*	15	NOV	0635	224	.00	.00	.00	0.
14	NOV	1810	75	.00	.00	.00	0.	*	15	NOV	0640	225	.00	.00	.00	0.
14	NOV	1815	76	.00	.00	.00	0.	*	15	NOV	0645	226	.00	.00	.00	0.
14	NOV	1820	77	.00	.00	.00	0.	*	15	NOV	0650	227	.00	.00	.00	0.
14	NOV	1825	78	.00	.00	.00	0.	*	15	NOV	0655	228	.00	.00	.00	0.
14	NOV	1830	79	.00	.00	.00	0.	*	15	NOV	0700	229	.00	.00	.00	0.
14	NOV	1835	80	.00	.00	.00	0.	*	15	NOV	0705	230	.00	.00	.00	0.
14	NOV	1840	81	.00	.00	.00	0.	*	15	NOV	0710	231	.00	.00	.00	0.
14	NOV	1845	82	.00	.00	.00	0.	*	15	NOV	0715	232	.00	.00	.00	0.
14	NOV	1850	83	.00	.00	.00	0.	*	15	NOV	0720	233	.00	.00	.00	0.
14	NOV	1855	84	.00	.00	.00	0.	*	15	NOV	0725	234	.00	.00	.00	0.
14	NOV	1900	85	.00	.00	.00	0.	*	15	NOV	0730	235	.00	.00	.00	0.
14	NOV	1905	86	.00	.00	.00	0.	*	15	NOV	0735	236	.00	.00	.00	0.
14	NOV	1910	87	.00	.00	.00	0.	*	15	NOV	0740	237	.00	.00	.00	0.
14	NOV	1915	88	.00	.00	.00	0.	*	15	NOV	0745	238	.00	.00	.00	0.
14	NOV	1920	89	.00	.00	.00	0.	*	15	NOV	0750	239	.00	.00	.00	0.
14	NOV	1925	90	.00	.00	.00	0.	*	15	NOV	0755	240	.00	.00	.00	0.
14	NOV	1930	91	.00	.00	.00	0.	*	15	NOV	0800	241	.00	.00	.00	0.
14	NOV	1935	92	.00	.00	.00	0.	*	15	NOV	0805	242	.00	.00	.00	0.
14	NOV	1940	93	.00	.00	.00	0.	*	15	NOV	0810	243	.00	.00	.00	0.
14	NOV	1945	94	.00	.00	.00	0.	*	15	NOV	0815	244	.00	.00	.00	0.
14	NOV	1950	95	.00	.00	.00	0.	*	15	NOV	0820	245	.00	.00	.00	0.
14	NOV	1955	96	.00	.00	.00	0.	*	15	NOV	0825	246	.00	.00	.00	0.
14	NOV	2000	97	.00	.00	.00	0.	*	15	NOV	0830	247	.00	.00	.00	0.
14	NOV	2005	98	.00	.00	.00	0.	*	15	NOV	0835	248	.00	.00	.00	0.
14	NOV	2010	99	.00	.00	.00	0.	*	15	NOV	0840	249	.00	.00	.00	0.
14	NOV	2015	100	.00	.00	.00	0.	*	15	NOV	0845	250	.00	.00	.00	0.
14	NOV	2020	101	.00	.00	.00	0.	*	15	NOV	0850	251	.00	.00	.00	0.
14	NOV	2025	102	.00	.00	.00	0.	*	15	NOV	0855	252	.00	.00	.00	0.
14	NOV	2030	103	.00	.00	.00	0.	*	15	NOV	0900	253	.00	.00	.00	0.
14	NOV	2035	104	.00	.00	.00	0.	*	15	NOV	0905	254	.00	.00	.00	0.
14	NOV	2040	105	.00	.00	.00	0.	*	15	NOV	0910	255	.00	.00	.00	0.
14	NOV	2045	106	.00	.00	.00	0.	*	15	NOV	0915	256	.00	.00	.00	0.
14	NOV	2050	107	.00	.00	.00	0.	*	15	NOV	0920	257	.00	.00	.00	0.
14	NOV	2055	108	.00	.00	.00	0.	*	15	NOV	0925	258	.00	.00	.00	0.
14	NOV	2100	109	.00	.00	.00	0.	*	15	NOV	0930	259	.00	.00	.00	0.
14	NOV	2105	110	.00	.00	.00	0.	*	15	NOV	0935	260	.00	.00	.00	0.
14	NOV	2110	111	.00	.00	.00	0.	*	15	NOV	0940	261	.00	.00	.00	0.
14	NOV	2115	112	.00	.00	.00	0.	*	15	NOV	0945	262	.00	.00	.00	0.
14	NOV	2120	113	.00	.00	.00	0.	*	15	NOV	0950	263	.00	.00	.00	0.
14	NOV	2125	114	.00	.00	.00	0.	*	15	NOV	0955	264	.00	.00	.00	0.
14	NOV	2130	115	.00	.00	.00	0.	*	15	NOV	1000	265	.00	.00	.00	0.
14	NOV	2135	116	.00	.00	.00	0.	*	15	NOV	1005	266	.00	.00	.00	0.
14	NOV	2140	117	.00	.00	.00	0.	*	15	NOV	1010	267	.00	.00	.00	0.
14	NOV	2145	118	.00	.00	.00	0.	*	15	NOV	1015	268	.00	.00	.00	0.
14	NOV	2150	119	.00	.00	.00	0.	*	15	NOV	1020	269	.00	.00	.00	0.
14	NOV	2155	120	.00	.00	.00	0.	*	15	NOV	1025	270	.00	.00	.00	0.
14	NOV	2200	121	.00	.00	.00	0.	*	15	NOV	1030	271	.00	.00	.00	0.
14	NOV	2205	122	.00	.00	.00	0.	*	15	NOV	1035	272	.00	.00	.00	0.
14	NOV	2210	123	.00	.00	.00	0.	*	15	NOV	1040	273	.00	.00	.00	0.
14	NOV	2215	124	.00	.00	.00	0.	*	15	NOV	1045	274	.00	.00	.00	0.
14	NOV	2220	125	.00	.00	.00	0.	*	15	NOV	1050	275	.00	.00	.00	0.
14	NOV	2225	126	.00	.00	.00	0.	*	15	NOV	1055	276	.00	.00	.00	0.
14	NOV	2230	127	.00	.00	.00	0.	*	15	NOV	1100	277	.00	.00	.00	0.
14	NOV	2235	128	.00	.00	.00	0.	*	15	NOV	1105	278	.00	.00	.00	0.
14	NOV	2240	129	.00	.00	.00	0.	*	15	NOV	1110	279	.00	.00	.00	0.
14	NOV	2245	130	.00	.00	.00	0.	*	15	NOV	1115	280	.00	.00	.00	0.
14	NOV	2250	131	.00	.00	.00	0.	*	15	NOV	1120	281	.00	.00	.00	0.
14	NOV	2255	132	.00	.00	.00	0.	*	15	NOV	1125	282	.00	.00	.00	0.
14	NOV	2300	133	.00	.00	.00	0.	*	15	NOV	1130	283	.00	.00	.00	0.
14	NOV	2305	134	.00	.00	.00	0.	*	15	NOV	1135	284	.00	.00	.00	0.
14	NOV	2310	135	.00	.00	.00	0.	*	15	NOV	1140	285	.00	.00	.00	0.
14	NOV	2315	136	.00	.00	.00	0.	*	15	NOV	1145	286	.00	.00	.00	0.
14	NOV	2320	137	.00	.00	.00	0.	*	15	NOV	1150	287	.00	.00	.00	0.
14	NOV	2325	138	.00	.00	.00	0.	*	15	NOV	1155	288	.00	.00	.00	0.
14	NOV	2330	139	.00	.00	.00	0.	*	15	NOV	1200	289	.00	.00	.00	0.
14	NOV	2335	140	.00	.00	.00	0.	*	15	NOV	1205	290	.00	.00	.00	0.
14	NOV	2340	141	.00	.00	.00	0.	*	15	NOV	1210	291	.00	.00	.00	0.
14	NOV	2345	142	.00	.00	.00	0.	*	15	NOV	1215	292	.00	.00	.00	0.
14	NOV	2350	143	.00	.00	.00	0.	*	15	NOV	1220	293	.00	.00	.00	0.
14	NOV	2355	144	.00	.00	.00	0.	*	15	NOV	1225	294	.00	.00	.00	0.
15	NOV	0000	145	.00	.00	.00	0.	*	15	NOV	1230	295	.00	.00	.00	0.
15	NOV	0005	146	.00	.00	.00	0.	*	15	NOV	1235	296	.00	.00	.00	0.
15	NOV	0010	147	.00	.00	.00	0.	*	15	NOV	1240	297	.00	.00	.00	0.
15	NOV	0015	148	.00	.00	.00	0.	*	15	NOV	1245	298	.00	.00	.00	0.
15	NOV	0020	149	.00	.00	.00	0.	*	15	NOV	1250	299	.00	.00	.00	0.
15	NOV	0025	150	.00	.00	.00	0.	*	15	NOV	1255	300	.00	.00	.00	0.

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TOTAL RAINFALL = 3.08, TOTAL LOSS = 1.18, TOTAL EXCESS = 1.90

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW (CFS) 6-HR	24-HR	72-HR	24.92-HR
20.	3.08	1.	0.	0.	0.

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(INCHES)      1.899        1.902        1.902        1.902
 (AC-FT)         1.           1.           1.           1.

 CUMULATIVE AREA =      .01 SQ MI
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            **************
            *            *
   17 KK    *    RESVR   *
            *            *
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ROUTE OUTLET HYDROGRAPH THROUGH RETENTION BASINS

HYDROGRAPH ROUTING DATA

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 19 RS          STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC        .00  INITIAL CONDITION
                          X        .00 WORKING R AND D COEFFICIENT

 20 SA                 AREA         .0         .0         .1         .1         .2         .3

 21 SE            ELEVATION    2267.00    2268.00    2269.00    2270.00    2271.00    2272.00

 22 SQ            DISCHARGE         0.         4.         7.        11.        15.        19.
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COMPUTED STORAGE-ELEVATION DATA

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     STORAGE        .00        .01        .06        .16        .32        .59
   ELEVATION    2267.00    2268.00    2269.00    2270.00    2271.00    2272.00
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HYDROGRAPH AT STATION RESVR

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
14	NOV	1200	1	0.	.0	2267.0	*	14	NOV	2020	101	0.	.0	2267.0	*	15	NOV	0440	201	0.	.0	2267.0
14	NOV	1205	2	0.	.0	2267.0	*	14	NOV	2025	102	0.	.0	2267.0	*	15	NOV	0445	202	0.	.0	2267.0
14	NOV	1210	3	0.	.0	2267.0	*	14	NOV	2030	103	0.	.0	2267.0	*	15	NOV	0450	203	0.	.0	2267.0
14	NOV	1215	4	0.	.0	2267.0	*	14	NOV	2035	104	0.	.0	2267.0	*	15	NOV	0455	204	0.	.0	2267.0
14	NOV	1220	5	0.	.0	2267.0	*	14	NOV	2040	105	0.	.0	2267.0	*	15	NOV	0500	205	0.	.0	2267.0
14	NOV	1225	6	0.	.0	2267.0	*	14	NOV	2045	106	0.	.0	2267.0	*	15	NOV	0505	206	0.	.0	2267.0
14	NOV	1230	7	0.	.0	2267.0	*	14	NOV	2050	107	0.	.0	2267.0	*	15	NOV	0510	207	0.	.0	2267.0
14	NOV	1235	8	0.	.0	2267.0	*	14	NOV	2055	108	0.	.0	2267.0	*	15	NOV	0515	208	0.	.0	2267.0
14	NOV	1240	9	0.	.0	2267.1	*	14	NOV	2100	109	0.	.0	2267.0	*	15	NOV	0520	209	0.	.0	2267.0
14	NOV	1245	10	0.	.0	2267.1	*	14	NOV	2105	110	0.	.0	2267.0	*	15	NOV	0525	210	0.	.0	2267.0
14	NOV	1250	11	0.	.0	2267.1	*	14	NOV	2110	111	0.	.0	2267.0	*	15	NOV	0530	211	0.	.0	2267.0
14	NOV	1255	12	0.	.0	2267.1	*	14	NOV	2115	112	0.	.0	2267.0	*	15	NOV	0535	212	0.	.0	2267.0
14	NOV	1300	13	0.	.0	2267.1	*	14	NOV	2120	113	0.	.0	2267.0	*	15	NOV	0540	213	0.	.0	2267.0
14	NOV	1305	14	0.	.0	2267.1	*	14	NOV	2125	114	0.	.0	2267.0	*	15	NOV	0545	214	0.	.0	2267.0
14	NOV	1310	15	0.	.0	2267.1	*	14	NOV	2130	115	0.	.0	2267.0	*	15	NOV	0550	215	0.	.0	2267.0
14	NOV	1315	16	0.	.0	2267.1	*	14	NOV	2135	116	0.	.0	2267.0	*	15	NOV	0555	216	0.	.0	2267.0
14	NOV	1320	17	0.	.0	2267.1	*	14	NOV	2140	117	0.	.0	2267.0	*	15	NOV	0600	217	0.	.0	2267.0
14	NOV	1325	18	0.	.0	2267.1	*	14	NOV	2145	118	0.	.0	2267.0	*	15	NOV	0605	218	0.	.0	2267.0
14	NOV	1330	19	0.	.0	2267.1	*	14	NOV	2150	119	0.	.0	2267.0	*	15	NOV	0610	219	0.	.0	2267.0
14	NOV	1335	20	0.	.0	2267.1	*	14	NOV	2155	120	0.	.0	2267.0	*	15	NOV	0615	220	0.	.0	2267.0
14	NOV	1340	21	0.	.0	2267.1	*	14	NOV	2200	121	0.	.0	2267.0	*	15	NOV	0620	221	0.	.0	2267.0
14	NOV	1345	22	0.	.0	2267.1	*	14	NOV	2205	122	0.	.0	2267.0	*	15	NOV	0625	222	0.	.0	2267.0
14	NOV	1350	23	0.	.0	2267.1	*	14	NOV	2210	123	0.	.0	2267.0	*	15	NOV	0630	223	0.	.0	2267.0
14	NOV	1355	24	0.	.0	2267.1	*	14	NOV	2215	124	0.	.0	2267.0	*	15	NOV	0635	224	0.	.0	2267.0
14	NOV	1400	25	0.	.0	2267.1	*	14	NOV	2220	125	0.	.0	2267.0	*	15	NOV	0640	225	0.	.0	2267.0
14	NOV	1405	26	0.	.0	2267.1	*	14	NOV	2225	126	0.	.0	2267.0	*	15	NOV	0645	226	0.	.0	2267.0
14	NOV	1410	27	0.	.0	2267.1	*	14	NOV	2230	127	0.	.0	2267.0	*	15	NOV	0650	227	0.	.0	2267.0
14	NOV	1415	28	0.	.0	2267.1	*	14	NOV	2235	128	0.	.0	2267.0	*	15	NOV	0655	228	0.	.0	2267.0
14	NOV	1420	29	0.	.0	2267.1	*	14	NOV	2240	129	0.	.0	2267.0	*	15	NOV	0700	229	0.	.0	2267.0
14	NOV	1425	30	0.	.0	2267.1	*	14	NOV	2245	130	0.	.0	2267.0	*	15	NOV	0705	230	0.	.0	2267.0
14	NOV	1430	31	1.	.0	2267.1	*	14	NOV	2250	131	0.	.0	2267.0	*	15	NOV	0710	231	0.	.0	2267.0
14	NOV	1435	32	1.	.0	2267.2	*	14	NOV	2255	132	0.	.0	2267.0	*	15	NOV	0715	232	0.	.0	2267.0
14	NOV	1440	33	1.	.0	2267.3	*	14	NOV	2300	133	0.	.0	2267.0	*	15	NOV	0720	233	0.	.0	2267.0
14	NOV	1445	34	1.	.0	2267.4	*	14	NOV	2305	134	0.	.0	2267.0	*	15	NOV	0725	234	0.	.0	2267.0
14	NOV	1450	35	2.	.0	2267.5	*	14	NOV	2310	135	0.	.0	2267.0	*	15	NOV	0730	235	0.	.0	2267.0
14	NOV	1455	36	3.	.0	2267.8	*	14	NOV	2315	136	0.	.0	2267.0	*	15	NOV	0735	236	0.	.0	2267.0
14	NOV	1500	37	5.	.0	2268.2	*	14	NOV	2320	137	0.	.0	2267.0	*	15	NOV	0740	237	0.	.0	2267.0
14	NOV	1505	38	8.	.1	2269.2	*	14	NOV	2325	138	0.	.0	2267.0	*	15	NOV	0745	238	0.	.0	2267.0
14	NOV	1510	39	10.	.1	2269.8	*	14	NOV	2330	139	0.	.0	2267.0	*	15	NOV	0750	239	0.	.0	2267.0
14	NOV	1515	40	11.	.2	2270.0	*	14	NOV	2335	140	0.	.0	2267.0	*	15	NOV	0755	240	0.	.0	2267.0
14	NOV	1520	41	10.	.1	2269.7	*	14	NOV	2340	141	0.	.0	2267.0	*	15	NOV	0800	241	0.	.0	2267.0
14	NOV	1525	42	9.	.1	2269.4	*	14	NOV	2345	142	0.	.0	2267.0	*	15	NOV	0805	242	0.	.0	2267.0
14	NOV	1530	43	8.	.1	2269.1	*	14	NOV	2350	143	0.	.0	2267.0	*	15	NOV	0810	243	0.	.0	2267.0
14	NOV	1535	44	6.	.0	2268.6	*	14	NOV	2355	144	0.	.0	2267.0	*	15	NOV	0815	244	0.	.0	2267.0
14	NOV	1540	45	4.	.0	2268.1	*	15	NOV	0000	145	0.	.0	2267.0	*	15	NOV	0820	245	0.	.0	2267.0
14	NOV	1545	46	2.	.0	2267.5	*	15	NOV	0005	146	0.	.0	2267.0	*	15	NOV	0825	246	0.	.0	2267.0
14	NOV	1550	47	1.	.0	2267.3	*	15	NOV	0010	147	0.	.0	2267.0	*	15	NOV	0830	247	0.	.0	2267.0
14	NOV	1555	48	1.	.0	2267.3	*	15	NOV	0015	148	0.	.0	2267.0	*	15	NOV	0835	248	0.	.0	2267.0
14	NOV	1600	49	1.	.0	2267.2	*	15	NOV	0020	149	0.	.0	2267.0	*	15	NOV	0840	249	0.	.0	2267.0
14	NOV	1605	50	1.	.0	2267.2	*	15	NOV	0025	150	0.	.0	2267.0	*	15	NOV	0845	250	0.	.0	2267.0
14	NOV	1610	51	1.	.0	2267.2	*	15	NOV	0030	151	0.	.0	2267.0	*	15	NOV	0850	251	0.	.0	2267.0
14	NOV	1615	52	1.	.0	2267.2	*	15	NOV	0035	152	0.	.0	2267.0	*	15	NOV	0855	252	0.	.0	2267.0
14	NOV	1620	53	1.	.0	2267.2	*	15	NOV	0040	153	0.	.0	2267.0	*	15	NOV	0900	253	0.	.0	2267.0
14	NOV	1625	54	1.	.0	2267.2	*	15	NOV	0045	154	0.	.0	2267.0	*	15	NOV	0905	254	0.	.0	2267.0
14	NOV	1630	55	1.	.0	2267.2	*	15	NOV	0050	155	0.	.0	2267.0	*	15	NOV	0910	255	0.	.0	2267.0
14	NOV	1635	56	1.	.0	2267.2	*	15	NOV	0055	156	0.	.0	2267.0	*	15	NOV	0915	256	0.	.0	2267.0
14	NOV	1640	57	1.	.0	2267.2	*	15	NOV	0100	157	0.	.0	2267.0	*	15	NOV	0920	257	0.	.0	2267.0
14	NOV	1645	58	1.	.0	2267.1	*	15	NOV	0105	158	0.	.0	2267.0	*	15	NOV	0925	258	0.	.0	2267.0
14	NOV	1650	59	1.	.0	2267.1	*	15	NOV	0110	159	0.	.0	2267.0	*	15	NOV	0930	259	0.	.0	2267.0

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 14 NOV 1655  60      1.       .0  2267.1 * 15 NOV 0115 160        0.       .0  2267.0 * 15 NOV 0935 260        0.       .0  2267.0
 14 NOV 1700  61      0.       .0  2267.1 * 15 NOV 0120 161        0.       .0  2267.0 * 15 NOV 0940 261        0.       .0  2267.0
 14 NOV 1705  62      0.       .0  2267.1 * 15 NOV 0125 162        0.       .0  2267.0 * 15 NOV 0945 262        0.       .0  2267.0
 14 NOV 1710  63      0.       .0  2267.1 * 15 NOV 0130 163        0.       .0  2267.0 * 15 NOV 0950 263        0.       .0  2267.0
 14 NOV 1715  64      0.       .0  2267.1 * 15 NOV 0135 164        0.       .0  2267.0 * 15 NOV 0955 264        0.       .0  2267.0
 14 NOV 1720  65      0.       .0  2267.1 * 15 NOV 0140 165        0.       .0  2267.0 * 15 NOV 1000 265        0.       .0  2267.0
 14 NOV 1725  66      0.       .0  2267.1 * 15 NOV 0145 166        0.       .0  2267.0 * 15 NOV 1005 266        0.       .0  2267.0
 14 NOV 1730  67      0.       .0  2267.1 * 15 NOV 0150 167        0.       .0  2267.0 * 15 NOV 1010 267        0.       .0  2267.0
 14 NOV 1735  68      0.       .0  2267.1 * 15 NOV 0155 168        0.       .0  2267.0 * 15 NOV 1015 268        0.       .0  2267.0
 14 NOV 1740  69      0.       .0  2267.1 * 15 NOV 0200 169        0.       .0  2267.0 * 15 NOV 1020 269        0.       .0  2267.0
 14 NOV 1745  70      0.       .0  2267.1 * 15 NOV 0205 170        0.       .0  2267.0 * 15 NOV 1025 270        0.       .0  2267.0
 14 NOV 1750  71      0.       .0  2267.1 * 15 NOV 0210 171        0.       .0  2267.0 * 15 NOV 1030 271        0.       .0  2267.0
 14 NOV 1755  72      0.       .0  2267.1 * 15 NOV 0215 172        0.       .0  2267.0 * 15 NOV 1035 272        0.       .0  2267.0
 14 NOV 1800  73      0.       .0  2267.1 * 15 NOV 0220 173        0.       .0  2267.0 * 15 NOV 1040 273        0.       .0  2267.0
 14 NOV 1805  74      0.       .0  2267.1 * 15 NOV 0225 174        0.       .0  2267.0 * 15 NOV 1045 274        0.       .0  2267.0
 14 NOV 1810  75      0.       .0  2267.0 * 15 NOV 0230 175        0.       .0  2267.0 * 15 NOV 1050 275        0.       .0  2267.0
 14 NOV 1815  76      0.       .0  2267.0 * 15 NOV 0235 176        0.       .0  2267.0 * 15 NOV 1055 276        0.       .0  2267.0
 14 NOV 1820  77      0.       .0  2267.0 * 15 NOV 0240 177        0.       .0  2267.0 * 15 NOV 1100 277        0.       .0  2267.0
 14 NOV 1825  78      0.       .0  2267.0 * 15 NOV 0245 178        0.       .0  2267.0 * 15 NOV 1105 278        0.       .0  2267.0
 14 NOV 1830  79      0.       .0  2267.0 * 15 NOV 0250 179        0.       .0  2267.0 * 15 NOV 1110 279        0.       .0  2267.0
 14 NOV 1835  80      0.       .0  2267.0 * 15 NOV 0255 180        0.       .0  2267.0 * 15 NOV 1115 280        0.       .0  2267.0
 14 NOV 1840  81      0.       .0  2267.0 * 15 NOV 0300 181        0.       .0  2267.0 * 15 NOV 1120 281        0.       .0  2267.0
 14 NOV 1845  82      0.       .0  2267.0 * 15 NOV 0305 182        0.       .0  2267.0 * 15 NOV 1125 282        0.       .0  2267.0
 14 NOV 1850  83      0.       .0  2267.0 * 15 NOV 0310 183        0.       .0  2267.0 * 15 NOV 1130 283        0.       .0  2267.0
 14 NOV 1855  84      0.       .0  2267.0 * 15 NOV 0315 184        0.       .0  2267.0 * 15 NOV 1135 284        0.       .0  2267.0
 14 NOV 1900  85      0.       .0  2267.0 * 15 NOV 0320 185        0.       .0  2267.0 * 15 NOV 1140 285        0.       .0  2267.0
 14 NOV 1905  86      0.       .0  2267.0 * 15 NOV 0325 186        0.       .0  2267.0 * 15 NOV 1145 286        0.       .0  2267.0
 14 NOV 1910  87      0.       .0  2267.0 * 15 NOV 0330 187        0.       .0  2267.0 * 15 NOV 1150 287        0.       .0  2267.0
 14 NOV 1915  88      0.       .0  2267.0 * 15 NOV 0335 188        0.       .0  2267.0 * 15 NOV 1155 288        0.       .0  2267.0
 14 NOV 1920  89      0.       .0  2267.0 * 15 NOV 0340 189        0.       .0  2267.0 * 15 NOV 1200 289        0.       .0  2267.0
 14 NOV 1925  90      0.       .0  2267.0 * 15 NOV 0345 190        0.       .0  2267.0 * 15 NOV 1205 290        0.       .0  2267.0
 14 NOV 1930  91      0.       .0  2267.0 * 15 NOV 0350 191        0.       .0  2267.0 * 15 NOV 1210 291        0.       .0  2267.0
 14 NOV 1935  92      0.       .0  2267.0 * 15 NOV 0355 192        0.       .0  2267.0 * 15 NOV 1215 292        0.       .0  2267.0
 14 NOV 1940  93      0.       .0  2267.0 * 15 NOV 0400 193        0.       .0  2267.0 * 15 NOV 1220 293        0.       .0  2267.0
 14 NOV 1945  94      0.       .0  2267.0 * 15 NOV 0405 194        0.       .0  2267.0 * 15 NOV 1225 294        0.       .0  2267.0
 14 NOV 1950  95      0.       .0  2267.0 * 15 NOV 0410 195        0.       .0  2267.0 * 15 NOV 1230 295        0.       .0  2267.0
 14 NOV 1955  96      0.       .0  2267.0 * 15 NOV 0415 196        0.       .0  2267.0 * 15 NOV 1235 296        0.       .0  2267.0
 14 NOV 2000  97      0.       .0  2267.0 * 15 NOV 0420 197        0.       .0  2267.0 * 15 NOV 1240 297        0.       .0  2267.0
 14 NOV 2005  98      0.       .0  2267.0 * 15 NOV 0425 198        0.       .0  2267.0 * 15 NOV 1245 298        0.       .0  2267.0
 14 NOV 2010  99      0.       .0  2267.0 * 15 NOV 0430 199        0.       .0  2267.0 * 15 NOV 1250 299        0.       .0  2267.0
 14 NOV 2015 100      0.       .0  2267.0 * 15 NOV 0435 200        0.       .0  2267.0 * 15 NOV 1255 300        0.       .0  2267.0
                                          *                                          *
*************************************************************************************************************************************

   PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR      24.92-HR
+    (CFS)       (HR)
                              (CFS)
+     11.        3.25                    1.          0.          0.          0.
                           (INCHES)     1.899       1.902       1.902       1.902
                            (AC-FT)       1.          1.          1.          1.

  PEAK STORAGE   TIME                           MAXIMUM AVERAGE STORAGE
                                       6-HR       24-HR       72-HR      24.92-HR
+   (AC-FT)      (HR)
        0.       3.25                    0.          0.          0.          0.

   PEAK STAGE    TIME                           MAXIMUM AVERAGE STAGE
                                       6-HR       24-HR       72-HR      24.92-HR
+    (FEET)      (HR)
    2269.96      3.25                 2267.39     2267.10     2267.09     2267.09

                          CUMULATIVE AREA =     .01 SQ MI

1
                                              RUNOFF SUMMARY
                                       FLOW IN CUBIC FEET PER SECOND
                                   TIME IN HOURS,  AREA IN SQUARE MILES

                                           PEAK    TIME OF      AVERAGE FLOW FOR MAXIMUM PERIOD         BASIN    MAXIMUM     TIME OF
            OPERATION        STATION       FLOW     PEAK                                                AREA     STAGE     MAX STAGE
+                                                               6-HOUR      24-HOUR      72-HOUR

            HYDROGRAPH AT
+                               S-2         20.     3.08          1.           0.           0.          .01

            ROUTED TO
+                              RESVR        11.     3.25          1.           0.           0.          .01
+                                                                                                              2269.96       3.25


*** NORMAL END OF HEC-1 ***
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SFA DREAM CENTER

Job No.: 5843 J:\Jobs\2002\5843-SFA\Calc\Drng\[HEC-1 Spreadsheet 10-14-02.xls]HEC-1 Da

Dimension-less Runoff Coefficients

Dimension-less runoff coefficients for parking/roads, re-vegetated natural desert, and undisturbed natrual desert is taken from Figure 2.2-17 of the Scottsdale Design Standards and Policies Manual, Section 2.2 Hyrdrology and Drainage Report Preperation - December 1999, page 43. The Dimension-less runoff coefficient for buildings is assumed to be the same as that of parking and roads. Soil type "C" is used for both re-vegetated and undisturbed natural desert.

Dimension-less Runoff Coefficient for Parking and Roads=	**0.95**
Dimension-less Runoff Coefficient for Building=	**0.95**
Dimension-less Runoff Coefficient for Re-Vegetated Natural Desert=	**0.48**
Dimension-less Runoff Coefficient for Undisturbed Natural Desert=	**0.48**

Precipitation:

Precipitation= 2.82 in.

(Per the Scottsdale Design Standards and Policies Manual, Section 2.2 Hydrology and Drainage Report Preparation - December 1999, page 11.)

SFA DREAM CENTER

Job No.: 5843 J:\Jobs\2002\5843-SFA\Calc\Drng\[HEC-1 Spreadsheet 11-25-02.xls]Pre vs. Post Run-Ret

Basin Calculations

BASIN 1

Contour	Area ft^2	Ave Area ft^2	Depth ft	Inc Vol ft^3	Total Vol ft^3	
67	74					
68	1375	725	1	725	725	
69	3169	2272	1	2272	2997	
70	5703	4436	1	4436	7433	
71	8653	7178	1	7178	14611	
72	12428	10541	1	10541	25151	
			Volume Provided=		**25151**	**ft^3**
					0.58	**acre-ft**

BASIN 2

Contour	Area ft^2	Ave Area ft^2	Depth ft	Inc Vol ft^3	Total Vol ft^3	
76	5315					
77	5922	5619	1	5619	5619	
78	6561	6242	1	6242	11860	
79	7235	6898	1	6898	18758	
80	7945	7590	1	7590	26348	
			Volume Provided=		**26348**	**ft^3**
					0.60	**acre-ft**

BASIN 3

Contour	Area ft^2	Ave Area ft^2	Depth ft	Inc Vol ft^3	Total Vol ft^3	
84	135					
85	686	411	1	411	411	
86	1902	1294	1	1294	1705	
87	3907	2905	1	2905	4609	
88	6557	5232	1	5232	9841	
			Volume Provided=		**9841**	**ft^3**
					0.23	**acre-ft**

SFA DRE. .M CENTER

Job No.: 5843 J:\Jobs\2002\5843-SFA\Calc\Drng\[HEC-1 Spreadsheet 11-25-02.xls]Pre vs. Post Run-Ret

Post Runoff and Retention Calculations

Design Storm= 100-Yr 2-Hr
Precipitation= 2.82 Inches
(0.24 Feet)

Runoff Factors

Dimension-less Runoff Coefficient for Parking and Roads:	0.95
Dimension-less Runoff Coefficient for Building:	0.95
Dimension-less Runoff Coefficient for Re-Vegetated Natural Desert:	0.48
Dimension-less Runoff Coefficient for Undisturbed Natural Desert:	0.48

Standard formula for determining runoff volumes (per the Scottsdale Design Standards and Policies Manual, Section 2.2, Hydrology and Drainage Report Preparation, December 1999, Page 11.): $V = \left(\frac{P_{100}}{12}\right)AC$

	Area Designation	Pre-Dev Area acres	Post Dev Area acres	Runoff Factor	Pre-Dev Runoff acre-ft	Post Dev Runoff acre-ft	Supply full Post Dev Runoff acre-ft	Goes to Basin
Area 2A	Parking and Roads	0.00	1.70	0.95	0.00	0.38	**0.38**	1
	Building	0.00	0.27	0.95	0.00	0.06	**0.06**	1
	Re-Vegetated N.D.	0.00	0.71	0.48	0.00	0.08	**0.08**	1
	Undisturbed N.D.	2.68	0.00	0.48	0.30	0.00	**0.00**	1
Area 3A & 4A	Parking and Roads	0.13	1.72	0.95	0.03	0.38	**0.38**	2
	Building	0.00	0.37	0.95	0.00	0.08	**0.08**	2
	Re-Vegetated N.D.	0.00	0.70	0.48	0.00	0.08	**0.08**	2
	Undisturbed N.D.	2.66	0.00	0.48	0.30	0.00	**0.00**	2
Area 1A	Parking and Roads	0.12	0.36	0.95	0.03	0.08	**0.08**	3
	Building	0.00	0.00	0.95	0.00	0.00	**0.00**	3
	Re-Vegetated N.D.	0.00	0.11	0.48	0.00	0.01	**0.01**	3
	Undisturbed N.D.	0.35	0.00	0.48	0.04	0.00	**0.00**	3

Retention provided for disturbed areas only.

	Basin 1 acre-ft	Basin 2 acre-ft	Basin 3 acre-ft	Basin 1 ft^3	Basin 2 ft^3	Basin 3 ft^3
Total to each Basin=	0.52	0.55	0.09	22646	23764	4041
Basin Volume Provided=	0.58	0.60	0.23	25151	26348	9841
Difference=	0.06	0.06	0.13	2505	2584	5800
Excess or Deficiency?	Excess	Excess	Excess			

	Summary (acre-ft)	Summary (ft^3)
Total Runoff=	1.16	50452
Total Retention=	1.41	61340

RETENTION MET

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: SFA - Dream Center - 5843 CONCENTRATION POINT: Wash A @ ℄

LOCATION: Dynamite and Pima Rds., Scottsdale

PROJECT NO.: 5843 STATION: _____

NAME OF STREAM/WATERSHED: _____

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1: 1.62 ACRES
- A2: – ACRES
- A3: – ACRES
- TOTAL (A): 1.62 ACRES

DRAINAGE LENGTH: 354 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: 2291.5 FEET
- AT STRUCTURE: 2278.75 FEET

DRAINAGE AREA SLOPE: 3.60 PERCENT

HYDROLOGIC SOIL GROUP: Type C

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.25 | (1.25)

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | 9.2 INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1: 0.48
- C2: –
- C3: –

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: 2.88 | 4.74 | 8.94 cfs

OFFSITE:

2	3	4
4.88	7.74	12.94

COMPUTED BY: BK DATE: 11/25/02

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: SFA - Dream Center - 5843 CONCENTRATION POINT: Wash C @ Basin 2

LOCATION: Dynamite and Pima Rds, Scottsdale

PROJECT NO.: 5843 STATION: —

NAME OF STREAM/WATERSHED: Wash C - Area 3A

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1: 1.11 ACRES
- A2: 1.97 ACRES
- A3: — ACRES
- TOTAL (A): 3.08 ACRES

DRAINAGE LENGTH: 638 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: 2296 FEET
- AT STRUCTURE: 2280 FEET

DRAINAGE AREA SLOPE: 2.51 PERCENT

HYDROLOGIC SOIL GROUP: Type C

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)

TIME OF CONCENTRATION: T_c = 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | 9.2 INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1: 0.95
- C2: 0.48
- C3: —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w = 0.65

PEAK DISCHARGE $Q_p = C_wIA(F)$: 7.41 | 12.21 | 23.02 cfs

OFFSITE: 6 / 13.41 | 10 / 22.21 | 15 / 38.02

COMPUTED BY: BK DATE: 11/26/02

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: SFA - Dream Center - 5843 CONCENTRATION POINT: Wash D @ Basin 2

LOCATION: Dynamite and Pima Rds, Scottsdale

PROJECT NO.: 5843 STATION: —

NAME OF STREAM/WATERSHED: Wash D - Area 4A

DESIGN DATA

DESIGN FREQUENCY: | (2) | 5 | (10) | 25 | 50 | (100) | YEARS

DRAINAGE AREA:
- A1: 1.04 ACRES
- A2: — ACRES
- A3: — ACRES
- TOTAL (A): 1.04 ACRES

DRAINAGE LENGTH: 289 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: 2296 FEET
- AT STRUCTURE: 2285 FEET

DRAINAGE AREA SLOPE: 3.81 PERCENT

HYDROLOGIC SOIL GROUP: Type 'C' for undisturbed desert.

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): | (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25) |

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): | 3.7 | 6.1 | | 9.2 | INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1: 0.48
- C2: —
- C3: —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: | 1.85 | 3.05 | | 5.74 | cfs

OFFSITE:

2	4	6
3.85	7.05	11.74

COMPUTED BY: BK DATE: 11/25/02

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: SFA - Dream Center - 5843 CONCENTRATION POINT: Wash G @ Pt

LOCATION: Dynamite and Pima Rds, Scottsdale

PROJECT NO.: 5843 STATION: ____

NAME OF STREAM/WATERSHED: Wash G - Area 7A

DESIGN DATA

DESIGN FREQUENCY: | (2) | 5 | (10) | 25 | 50 | (100) | YEARS

DRAINAGE AREA:
- A1 0.84 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 0.84 ACRES

DRAINAGE LENGTH: 318 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: 2285.12 FEET
- AT STRUCTURE 2267.00 FEET

DRAINAGE AREA SLOPE: 5.70 PERCENT

HYDROLOGIC SOIL GROUP: Type C for undisturbed desert.

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): | (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25) |

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): | 3.7 | | 6.1 | | | 9.2 | INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: | 1.49 | | 2.46 | | | 4.64 | cfs

COMPUTED BY: BK DATE: 11/25/02

CHECKED BY: ____ DATE: ____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: SFA - Dream Center - 5843 CONCENTRATION POINT: Wash 8A @ ℄

LOCATION: Dynamite and Pima Rds., Scottsdale

PROJECT NO.: 5843 STATION: ____

NAME OF STREAM/WATERSHED: Wash 8A - Area A8

DESIGN DATA

DESIGN FREQUENCY:	(2) | 5 | (10) | 25 | 50 | (100)		YEARS
DRAINAGE AREA:	A1	0.51	ACRES
	A2	—	ACRES
	A3	—	ACRES
	TOTAL (A)	0.51	ACRES
DRAINAGE LENGTH:		204	FEET
ELEVATION:			
TOP OF DRAINAGE AREA:		2293	FEET
AT STRUCTURE		2273	FEET
DRAINAGE AREA SLOPE:		9.80	PERCENT
HYDROLOGIC SOIL GROUP:		Type C for undisturbed desert.	

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F):	(1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)		
TIME OF CONCENTRATION:	T_c	5	MINUTES
RAINFALL INTENSITY (I):		3.7 | | 6.1 | | | 9.2	INCHES/HOUR (Figure 2.2-13)
RUNOFF COEFFICIENT (C):	C1	0.48	
	C2	—	
	C3	—	
WEIGHTED RUNOFF COEFFICIENT (C_w):	C_w	0.48	
PEAK DISCHARGE $Q_p = C_wIA(F)$:		0.91 | | 1.49 | | | 2.82	cfs

COMPUTED BY: BK DATE: 11/25/02

CHECKED BY: ____ DATE: ____

FIGURE 2.2-18
Hydrologic Design Data Record

June 2001

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Dam Safety Section

ARIZONA DEPARTMENT OF WATER RESOURCES

Joseph C. Smith, Director
J. Darrell Jordan, Assistant Director, Surface Water Management Division

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Phoenix, Arizona 85004

Laws

Where to Look

Persons owning or building dams should be aware that both dam safety statutes and rules may apply to the dam. Department personnel are available to assist anyone considering construction or alteration of a dam.

The Department has many maps and publications available to assist the public. Dam safety statutes are located in Arizona Revised Statutes sections 45-1201 through 45-1223. These and other Department statutes may be viewed at www.azleg.state.az .us. The Department offers every two years a soft cover book, Arizona Laws Relating to Water, through its bookstore [(602) 417-2485 or www.water.az.gov]. The dam safety statutes may also be obtained through the Dam Safety Section.

Rules

By Which We Operate

Dam safety rules (R12-15-1201 through R12-15-1226) may be obtained through the Dam Safety Section, or may be viewed in the Arizona Administrative Code at www.sosaz.com.

If the Dam Fits . . .

Jurisdiction. A.R.S. §45-1201

The Arizona Department of Water Resources, Dam Safety Section, has jurisdiction over dams 25 feet or more in height or dams that store more than 50 acre-feet of water. Some dams are excepted from jurisdiction, including (1) barriers less than 6 feet in height, regardless of storage capacity; (2) barriers that have a storage capacity of 15 acre-feet or less, regardless of height; (3) any barrier for the purpose of controlling liquid-borne material; (4) any barrier that is a release-contained barrier; and (5) any barrier that is owned, controlled, operated, maintained, or managed by the United States government as long as it is subject to a dam safety program that is at least as stringent as Arizona's.

Available Publications

The following publications may be obtained through the dam safety section:

- Arizona's Program for Safety of Dams (Rev. 4/01)
- Instructions for Filing an Application (Rev. 4/01)
- Checklist of items required for a complete application (Rev. 4/01)
- Application Form (Rev. 4/01)
- Requirements During and Following Construction of High and Significant Hazard Dams (Rev. 4/01)

with the natural ground surface to the spillway crest elevation. For the purpose of determining jurisdictional status, the lowest elevation of the outside limit of the barrier may be the outlet pipe invert elevation if the outlet is constructed below natural ground.

18. "Impound" means to cause water or a liquid to be confined within a reservoir and held with no discharge.
19. "Incremental adverse consequences" means under the same loading conditions, the additional adverse consequences such as economic, intangible, lifeline, or human losses, that would occur due to the failure or improper operation of the dam over those that would have occurred without failure or improper operation of the dam.
20. "Inflow design flood" or "IDF" means the reservoir flood inflow magnitude selected on the basis of size and hazard potential classification for emergency spillway design requirements of a dam.
21. "Intangible losses" means incremental adverse consequences to property that are not economic in nature, including property related to social, cultural, unique, or resource-based values, including the loss of irreplaceable and unique historic and cultural features; long-lasting pollution of land or water; or long-lasting or permanent changes to the ecology, including fish and endangered species habitat identified and evaluated by a public natural resource management or protection agency.
22. "Jurisdictional dam" means a barrier that meets the definition of a dam prescribed in A.R.S. § 45-1201 that is not exempted by R12-15-1203 over which the Department of Water Resources exercises jurisdiction.
23. "Levee" means an embankment of earth, concrete, or other material used to prevent a watercourse from spreading laterally or overflowing its banks. A levee is not used to impound water.
24. "License" means license of final approval issued by the Director upon completion or enlargement of a dam under A.R.S. § 45-1209.
25. "Lifeline losses" mean disruption of essential services such as water, power, gas, telephone, or emergency medical services.
26. "Liquid-borne material" means mine tailings or other milled ore products transported in a slurry to a storage impoundment.
27. "Maximum credible earthquake" means the most severe earthquake that is believed to be possible at a point on the basis of geologic and seismological evidence.
28. "Maximum water surface" means the maximum elevation of the reservoir water level attained during routing of the inflow design flood.
29. "Natural ground surface" means the undisturbed ground surface before excavation or filling, or the undisturbed bed of the stream or river.
30. "Outlet works" means a closed conduit under or through a dam or through an abutment for the controlled discharge of the contents normally impounded by a dam and reservoir. The outlet works include the inlet and outlet structures appurtenant to the conduit. Outlet works may be controlled or uncontrolled.
31. "Probable" means likely to occur, reasonably expected, and realistic.
32. "Probable maximum flood" or "PMF" means the flood runoff expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region, including rain and snow where applicable. 1/2 PMF is that flood represented by the flood hydrograph with ordinates equal to 1/2 the corresponding ordinates of the PMF hydrograph.
33. "Probable maximum precipitation" means the greatest depth of precipitation for a given duration that is theoretically physically possible over a particular size storm area at a particular geographical location at a particular time of year.
34. "Reservoir" means any basin that contains or is capable of containing water or other liquids impounded by a dam.
35. "Residual freeboard" means the vertical distance between the highest water surface elevation during the inflow design flood and the lowest point at the top of the dam.
36. "Restricted storage" means a condition placed on a license by the Director to reduce the storage level of a reservoir because of a safety deficiency.
37. "Saddle dike or saddle dam" means any dam constructed in a topographically low area on the perimeter of a reservoir, required to contain the reservoir at the highest water surface elevation.
38. "Safe" means that a dam has sufficient structural integrity and flood routing capacity to make failure of the dam unlikely.
39. "Safe storage level" means the maximum reservoir water surface elevation at which the Director determines it is safe to impound water or other liquids in the reservoir.
40. "Safety deficiency" means a condition at a dam that impairs or adversely affects the safe operation of the dam.
41. "Safety inspection" means an investigation by an engineer or a person under the direction of an engineer to assess the safety of a dam and determine the safe storage level for a reservoir, which includes review of design reports, construction documents, and previous safety inspection reports of the dam, spillways, outlet facilities, seepage control and measurement systems, and permanent monument or monitoring installations.
42. "Spillway crest" means the highest elevation of the floor of the spillway along a centerline profile through the spillway.
43. "Storage capacity" means the maximum volume of water, sediment, or debris that can be impounded in the reservoir with no discharge of water, including the situation where an uncontrolled outlet becomes plugged. The storage capacity is reached when the water level is at the crest of the emergency spillway, or at the top of permanently mounted emergency spillway gates in the closed position. Storage capacity excludes dead storage below the natural ground surface.
44. "Surcharge storage" means the additional water storage volume between the emergency spillway crest or closed gates, and the top of the dam.
45. "Total freeboard" means the vertical distance between the emergency spillway crest and the top of the dam.
46. "Unsafe" means that safety deficiencies in a dam or spillway could result in failure of the dam with subsequent loss of human life or significant property damage.

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-02 renumbered without change as Section R12-15-1202 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

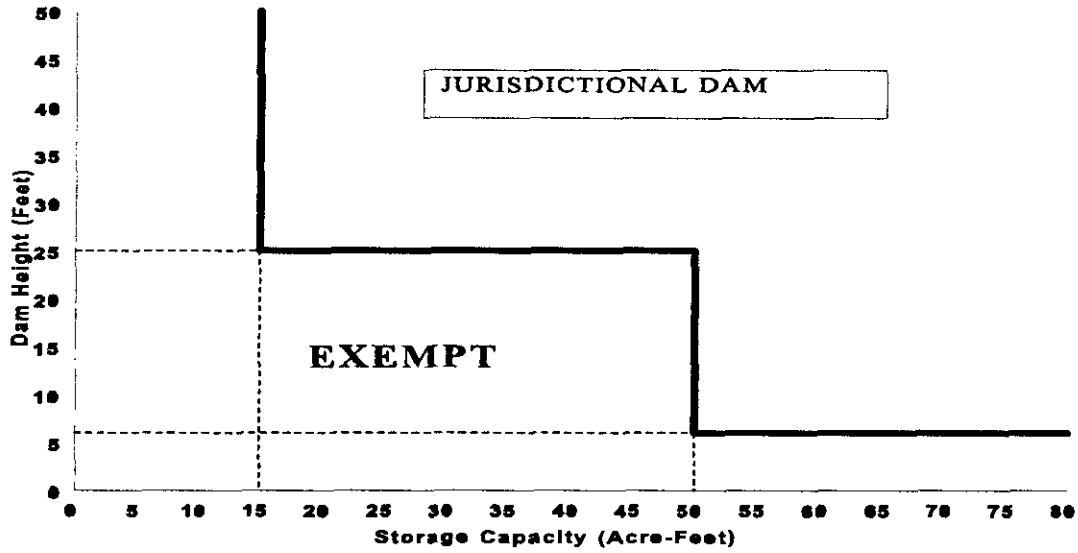
R12-15-1203. Exempt Structures

The following structures are exempt from regulation by the Department:

1. Any artificial barrier identified as exempt on Table 1 and defined as follows:
   a. Less than 6 feet in height, regardless of storage capacity.
   b. Between 6 and 25 feet in height with a storage capacity of less than 50 acre-feet.
   c. Greater than 25 feet in height with 15 acre-feet or less of storage capacity.
2. A dam owned by the federal government. A dam designed by the federal government for any non-federal entity or person that will subsequently be owned or operated by a person or entity defined as an owner in A.R.S. § 45-1201 is subject to jurisdiction, beginning with design and construction of the dam.
3. A dam owned or operated by an agency or instrumentality of the federal government, if a dam safety program at least as stringent as this Article is applicable to and enforced against the agency or instrumentality.
4. A transportation structure such as a highway, road, or railroad fill that exists solely for transportation purposes. A transportation structure designed, constructed, or modified with the intention of impounding water on an intermittent or permanent basis and meeting the definition of dam in A.R.S. § 45-1201 is subject to jurisdiction.
5. A levee constructed adjacent to or along a watercourse, primarily to control floodwater.
6. A self-supporting concrete or steel water storage tank.
7. An impoundment for the purpose of storing liquid-borne material.
8. A release-contained barrier as defined by A.R.S. § 45-1201(5).

Historical Note
Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-03 renumbered without change as Section R12-15-1203 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Table 1. Exempt Structures



Historical Note
New Table adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1204. Provision for Guidelines
The Department may develop and adopt substantive policy statements that serve as dam safety guidelines to aid a dam owner or engineer in complying with this Article. The Department recommends that dam owners and engineers consult design guidelines published by agencies of the federal government, including the U.S. Bureau of Reclamation, the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, and the Federal Energy Regulatory Commission, for the design of concrete, roller compacted concrete, stone masonry, timber, inflatable rubber, and mechanically-stabilized earth dams. The Director may require that other criteria be used or revise any of the specific criteria for the purpose of dam safety. An owner shall obtain advance approval by the Director of design criteria.

Historical Note
Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-04 renumbered without change as Section R12-15-1204 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1205. General Responsibilities
A. Each owner is responsible for the safe design, operation, and maintenance of a dam. The owner shall operate, maintain, and regularly inspect a dam so that it does not constitute a danger to human life or property. The owner of a high or significant hazard potential dam shall provide timely warning to the Department and all other persons listed in the emergency action plan of problems at the dam. The owner shall develop and maintain effective emergency action plans and coordinate those plans with local officials as prescribed in R12-15-1221.
B. The owner shall conduct frequent observation of the dam, as prescribed in the emergency action plan and as follows:

APPENDIX B: Existing Drainage

HEC-1 Data and Model for Wash B
Bank Full Flow Calculations
HEC-RAS Model of Wash E
Peak Discharges Using Rational Method

(Bank Full Flow Calculations, HEC-RAS Model & Peak Discharges Copied from Preliminary Drainage Report prepared by Huitt-Zollars, Inc. November 19, 2001)

Per COS: HEC-1 model of Wash B only

Existing Conditon Wash B

Subbasin ID No.	Area (acres)	Area (Sq. Miles)	SCS CN	Percent Impervious	Lag (Hours)	Subbasin Length (feet)	Average Subbasin Slope (%)
2A & 2B	5.4660	0.0085	77	2.54	0.089	1570	3.3

* Percent Impervious: area in Pima Road (0.14 acres)

Proposed Conditon Wash B

Subbasin ID No.	Area (acres)	Area (Sq. Miles)	SCS CN	Percent Impervious	Lag (Hours)	Subbasin Length (feet)	Average Subbasin Slope (%)
2A & 2B	4.5400	0.0071	77	39.71	0.060	1155	2.58

* Percent Impervious: Building and Parking Lot within Wash B (1.80 acres)

Rainfall Loss

SCS Curve Number (COS Fig 2.2-19 * 2.2-20)
Use SCS Soil Survey of Aguila-Carefree Area

Runoff Transformation

SCS Dimensionless Unit Hydrograph
Calculate Lag using Time of Concentration and Travel Time
SCS TR55 Procedure (COS Appendix B)

Computation Time Interval

5 minutes

Channel Routing

Normal Depth (Modified Pols), eight point

Precipitation Values

1-hour Values:

$Y_2 = 1.03$ (2-year, 1-hr value)
$Y_{100} = 2.60$ (100-year, 1-hr value)

Storm Duration For 6-Hour	Return Period 2-year	10-year	100-year	
5-min	0.35	0.58	0.88	
15-min	0.64	1.05	1.61	
1-hr	1.03	1.70	2.60	From Appendix A, Table 1 - Corrected Values
2-hr	1.17	1.90	2.91	
3-hr	1.27	2.03	3.11	
6-hr	1.45	2.28	3.50	From Appendix A, Table 1 - Corrected Values

APPENDIX A

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

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 duration 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	1.45	1.45	1.90	1.90
5	1.93	1.95	2.59	2.54
10	2.24	2.28	2.91	2.92
25	2.73	2.70	3.43	3.45
50	3.20	3.10	3.90	3.92
100	3.37	3.50	4.40	4.40

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 I entitled "Corrected Value."

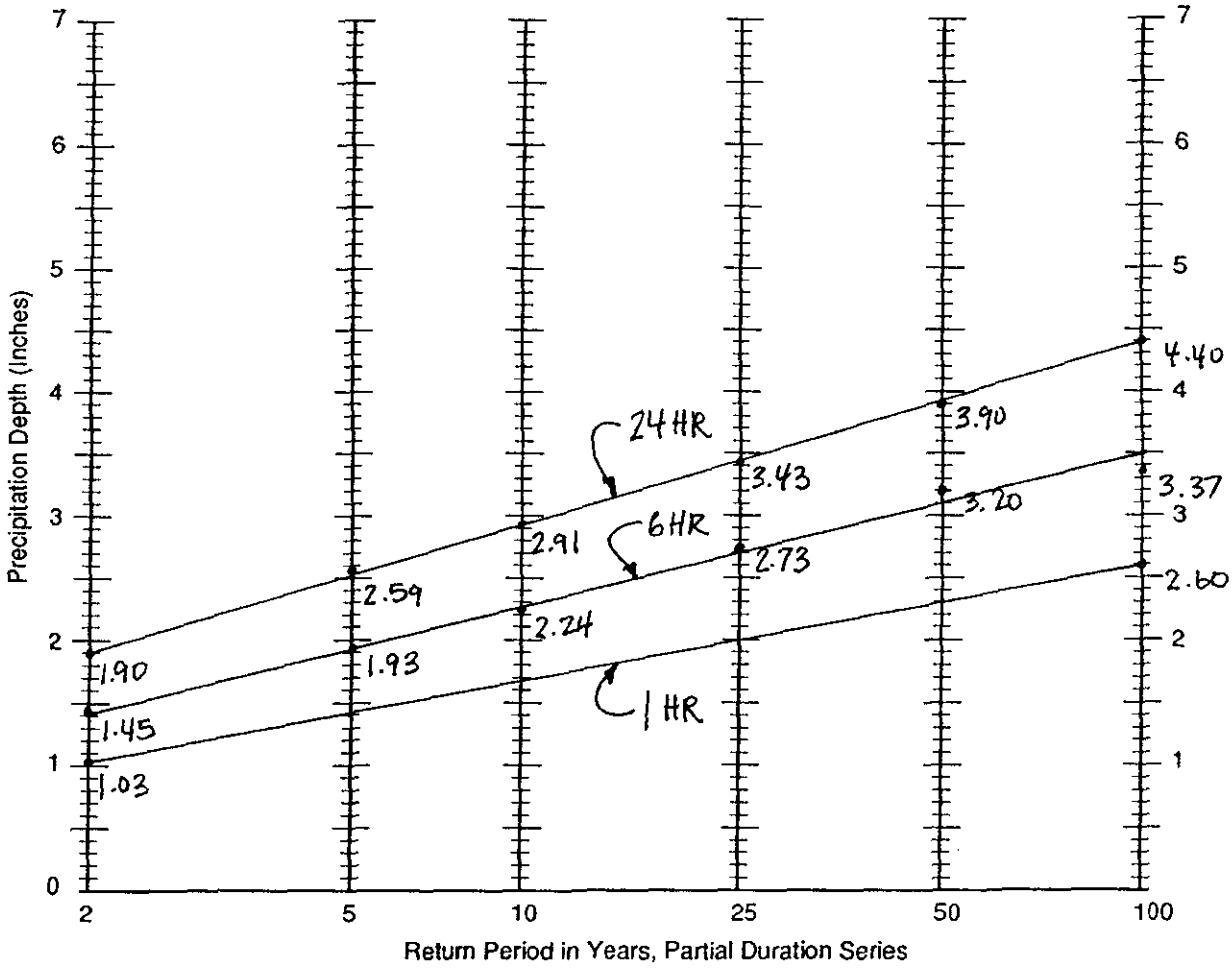
NOTE: The 1 hour precipitation value is needed to determine the 2 and 3 hour values as well as the 5, 10, 15, and 30 minute values.

Sheet 1 of 3

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

APPENDIX A (con't)

Figure 1. Precipitation Depth versus Return Period for Partial Duration Series



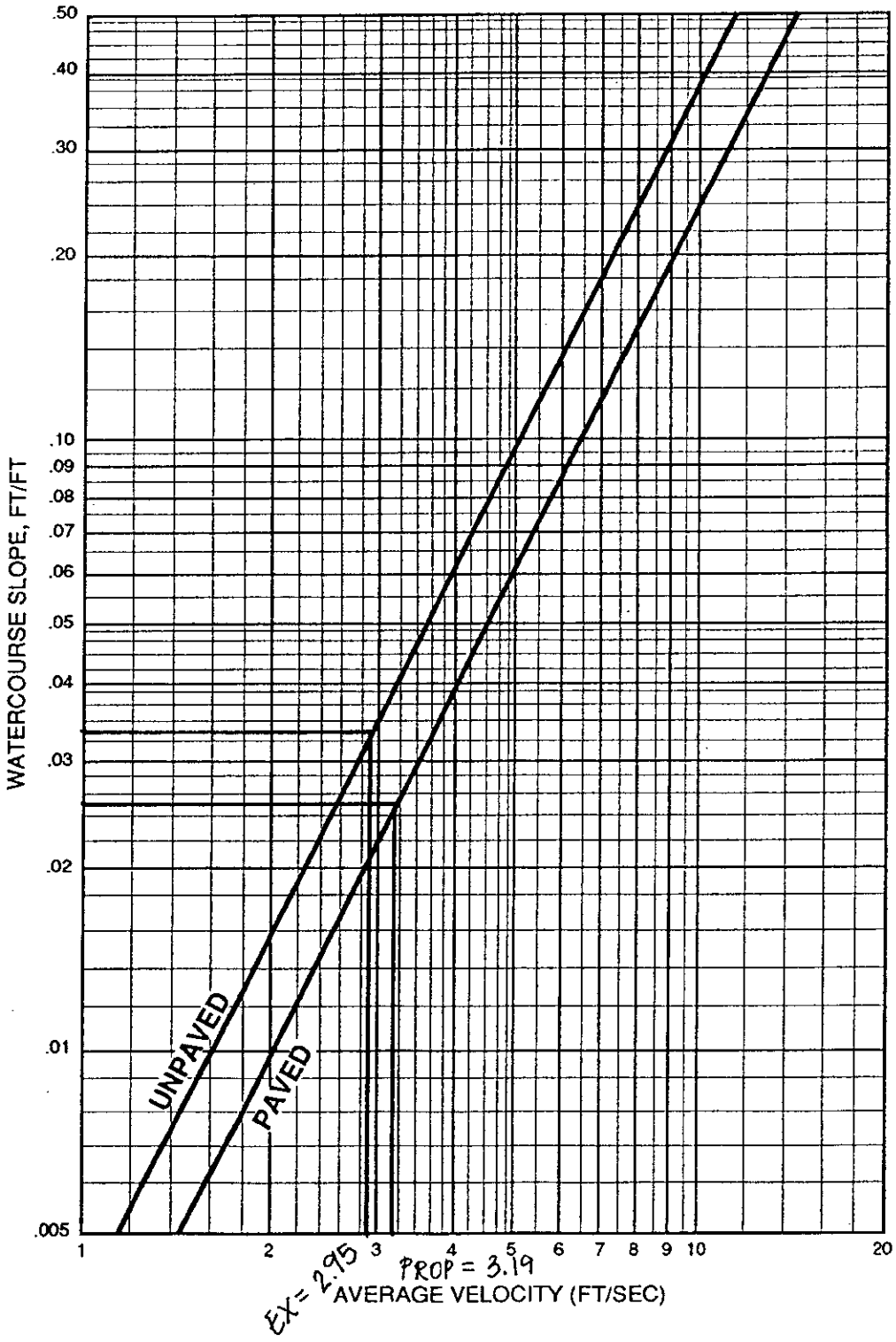
Project: SFA - Dream Center Station: _____

Sheet 2 of 3

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

APPENDIX B (con't)

Figure B-1. Average Velocity for Estimating Travel Time for Shallow Concentrated Flow



Source: TR-55, Fig. 3-1

Sheet 2 of 4

```
1*****************************************                    *****************************************
*                                       *                    *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS        *
*              JUN   1998               *                    *   HYDROLOGIC ENGINEERING CENTER       *
*            VERSION 4.1                *                    *        609 SECOND STREET              *
*                                       *                    *     DAVIS, CALIFORNIA 95616           *
*  RUN DATE   24NOV02  TIME  00:50:15   *                    *         (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

1                                          HEC-1 INPUT                                            PAGE  1

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

          1           ID       DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
          2           ID       COS NO. 88-PA-2001
          3           ID       HEC ENGINEERING JOB NO. 5843
          4           ID       QS #51-48
          5           ID
          6           ID       THIS HEC-1 RUN IS FOR THE EXISTING CONDITION OF WASH B
          7           ID       USE SCS METHOD
          8           ID       THIS IS FOR THE 2-YR, 6-HR STORM EVENT
          9           ID
         10           IT      5 14NOV01    1200     300

         11           KK    S-2
         12           KM      RUNOFF FROM SUB BASINS 2A AND 2B
         13           BA  0.0085
         14           PH      50            0.35    0.64    1.03    1.17    1.27    1.45
         15           LS       0      77    2.54
         16           UD   0.089
         17           ZZ
```


```
1*****************************************                    *****************************************
*                                       *                    *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS        *
*              JUN   1998               *                    *   HYDROLOGIC ENGINEERING CENTER       *
*            VERSION 4.1                *                    *        609 SECOND STREET              *
*                                       *                    *     DAVIS, CALIFORNIA 95616           *
*  RUN DATE   24NOV02  TIME  00:50:15   *                    *         (916) 756-1104                *
*                                       *                    *                                       *
*****************************************                    *****************************************
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                      DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
                      COS NO. 88-PA-2001
                      HEC ENGINEERING JOB NO. 5843
                      QS #51-48

                      THIS HEC-1 RUN IS FOR THE EXISTING CONDITION OF WASH B
                      USE SCS METHOD
                      THIS IS FOR THE 2-YR, 6-HR STORM EVENT


   IT          HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     14NOV 1  STARTING DATE
                    ITIME       1200  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     15NOV 1  ENDING DATE
                   NDTIME       1255  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

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

```
          **************
          *            *
11 KK     *     S-2    *
          *            *
          **************
                        RUNOFF FROM SUB BASINS 2A AND 2B

     SUBBASIN RUNOFF DATA

13 BA          SUBBASIN CHARACTERISTICS
                    TAREA         .01  SUBBASIN AREA

               PRECIPITATION DATA

14 PH                                 DEPTHS FOR  50-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .35     .64    1.03    1.17    1.27    1.45     .00     .00     .00     .00     .00     .00

                                              STORM AREA =      .01

15 LS          SCS LOSS RATE
                    STRTL         .60  INITIAL ABSTRACTION
                   CRVNBR       77.00  CURVE NUMBER
                    RTIMP        2.54  PERCENT IMPERVIOUS AREA

16 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG         .09  LAG

                                                  ***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

                                                  UNIT HYDROGRAPH
                                                7 END-OF-PERIOD ORDINATES
                    23.       28.       10.        4.        1.        0.        0.
```

HYDROGRAPH AT STATION S-2

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
14	NOV	1200	1	.00	.00	.00	0.	15	NOV	0030	151	.00	.00	.00	0.
14	NOV	1205	2	.00	.00	.00	0.	15	NOV	0035	152	.00	.00	.00	0.
14	NOV	1210	3	.00	.00	.00	0.	15	NOV	0040	153	.00	.00	.00	0.
14	NOV	1215	4	.00	.00	.00	0.	15	NOV	0045	154	.00	.00	.00	0.
14	NOV	1220	5	.00	.00	.00	0.	15	NOV	0050	155	.00	.00	.00	0.
14	NOV	1225	6	.00	.00	.00	0.	15	NOV	0055	156	.00	.00	.00	0.
14	NOV	1230	7	.00	.00	.00	0.	15	NOV	0100	157	.00	.00	.00	0.
14	NOV	1235	8	.00	.00	.00	0.	15	NOV	0105	158	.00	.00	.00	0.
14	NOV	1240	9	.00	.00	.00	0.	15	NOV	0110	159	.00	.00	.00	0.
14	NOV	1245	10	.00	.00	.00	0.	15	NOV	0115	160	.00	.00	.00	0.
14	NOV	1250	11	.00	.00	.00	0.	15	NOV	0120	161	.00	.00	.00	0.
14	NOV	1255	12	.00	.00	.00	0.	15	NOV	0125	162	.00	.00	.00	0.
14	NOV	1300	13	.00	.00	.00	0.	15	NOV	0130	163	.00	.00	.00	0.
14	NOV	1305	14	.00	.00	.00	0.	15	NOV	0135	164	.00	.00	.00	0.
14	NOV	1310	15	.00	.00	.00	0.	15	NOV	0140	165	.00	.00	.00	0.
14	NOV	1315	16	.01	.00	.00	0.	15	NOV	0145	166	.00	.00	.00	0.
14	NOV	1320	17	.01	.01	.00	0.	15	NOV	0150	167	.00	.00	.00	0.
14	NOV	1325	18	.01	.01	.00	0.	15	NOV	0155	168	.00	.00	.00	0.
14	NOV	1330	19	.01	.01	.00	0.	15	NOV	0200	169	.00	.00	.00	0.
14	NOV	1335	20	.01	.01	.00	0.	15	NOV	0205	170	.00	.00	.00	0.
14	NOV	1340	21	.01	.01	.00	0.	15	NOV	0210	171	.00	.00	.00	0.
14	NOV	1345	22	.01	.01	.00	0.	15	NOV	0215	172	.00	.00	.00	0.
14	NOV	1350	23	.01	.01	.00	0.	15	NOV	0220	173	.00	.00	.00	0.
14	NOV	1355	24	.01	.01	.00	0.	15	NOV	0225	174	.00	.00	.00	0.
14	NOV	1400	25	.01	.01	.00	0.	15	NOV	0230	175	.00	.00	.00	0.
14	NOV	1405	26	.01	.01	.00	0.	15	NOV	0235	176	.00	.00	.00	0.
14	NOV	1410	27	.01	.01	.00	0.	15	NOV	0240	177	.00	.00	.00	0.
14	NOV	1415	28	.01	.01	.00	0.	15	NOV	0245	178	.00	.00	.00	0.
14	NOV	1420	29	.01	.01	.00	0.	15	NOV	0250	179	.00	.00	.00	0.
14	NOV	1425	30	.01	.01	.00	0.	15	NOV	0255	180	.00	.00	.00	0.
14	NOV	1430	31	.01	.01	.00	0.	15	NOV	0300	181	.00	.00	.00	0.
14	NOV	1435	32	.02	.02	.00	0.	15	NOV	0305	182	.00	.00	.00	0.
14	NOV	1440	33	.03	.03	.00	0.	15	NOV	0310	183	.00	.00	.00	0.
14	NOV	1445	34	.03	.03	.00	0.	15	NOV	0315	184	.00	.00	.00	0.
14	NOV	1450	35	.05	.05	.00	0.	15	NOV	0320	185	.00	.00	.00	0.
14	NOV	1455	36	.06	.06	.00	0.	15	NOV	0325	186	.00	.00	.00	0.
14	NOV	1500	37	.15	.15	.00	0.	15	NOV	0330	187	.00	.00	.00	0.
14	NOV	1505	38	.31	.28	.03	1.	15	NOV	0335	188	.00	.00	.00	0.
14	NOV	1510	39	.10	.08	.02	1.	15	NOV	0340	189	.00	.00	.00	0.
14	NOV	1515	40	.06	.04	.01	1.	15	NOV	0345	190	.00	.00	.00	0.
14	NOV	1520	41	.04	.03	.01	1.	15	NOV	0350	191	.00	.00	.00	0.
14	NOV	1525	42	.03	.02	.01	1.	15	NOV	0355	192	.00	.00	.00	0.
14	NOV	1530	43	.03	.02	.01	1.	15	NOV	0400	193	.00	.00	.00	0.
14	NOV	1535	44	.01	.01	.00	0.	15	NOV	0405	194	.00	.00	.00	0.
14	NOV	1540	45	.01	.01	.00	0.	15	NOV	0410	195	.00	.00	.00	0.
14	NOV	1545	46	.01	.01	.00	0.	15	NOV	0415	196	.00	.00	.00	0.
14	NOV	1550	47	.01	.01	.00	0.	15	NOV	0420	197	.00	.00	.00	0.
14	NOV	1555	48	.01	.01	.00	0.	15	NOV	0425	198	.00	.00	.00	0.
14	NOV	1600	49	.01	.01	.00	0.	15	NOV	0430	199	.00	.00	.00	0.
14	NOV	1605	50	.01	.01	.00	0.	15	NOV	0435	200	.00	.00	.00	0.
14	NOV	1610	51	.01	.01	.00	0.	15	NOV	0440	201	.00	.00	.00	0.
14	NOV	1615	52	.01	.01	.00	0.	15	NOV	0445	202	.00	.00	.00	0.
14	NOV	1620	53	.01	.00	.00	0.	15	NOV	0450	203	.00	.00	.00	0.
14	NOV	1625	54	.01	.00	.00	0.	15	NOV	0455	204	.00	.00	.00	0.
14	NOV	1630	55	.01	.00	.00	0.	15	NOV	0500	205	.00	.00	.00	0.
14	NOV	1635	56	.01	.00	.00	0.	15	NOV	0505	206	.00	.00	.00	0.
14	NOV	1640	57	.01	.00	.00	0.	15	NOV	0510	207	.00	.00	.00	0.
14	NOV	1645	58	.01	.00	.00	0.	15	NOV	0515	208	.00	.00	.00	0.
14	NOV	1650	59	.01	.00	.00	0.	15	NOV	0520	209	.00	.00	.00	0.
14	NOV	1655	60	.01	.00	.00	0.	15	NOV	0525	210	.00	.00	.00	0.
14	NOV	1700	61	.00	.00	.00	0.	15	NOV	0530	211	.00	.00	.00	0.

14	NOV	1705	62	.00	.00	.00	0.	*	15	NOV	0535	212	.00	.00	.00	0.
14	NOV	1710	63	.00	.00	.00	0.	*	15	NOV	0540	213	.00	.00	.00	0.
14	NOV	1715	64	.00	.00	.00	0.	*	15	NOV	0545	214	.00	.00	.00	0.
14	NOV	1720	65	.00	.00	.00	0.	*	15	NOV	0550	215	.00	.00	.00	0.
14	NOV	1725	66	.00	.00	.00	0.	*	15	NOV	0555	216	.00	.00	.00	0.
14	NOV	1730	67	.00	.00	.00	0.	*	15	NOV	0600	217	.00	.00	.00	0.
14	NOV	1735	68	.00	.00	.00	0.	*	15	NOV	0605	218	.00	.00	.00	0.
14	NOV	1740	69	.00	.00	.00	0.	*	15	NOV	0610	219	.00	.00	.00	0.
14	NOV	1745	70	.00	.00	.00	0.	*	15	NOV	0615	220	.00	.00	.00	0.
14	NOV	1750	71	.00	.00	.00	0.	*	15	NOV	0620	221	.00	.00	.00	0.
14	NOV	1755	72	.00	.00	.00	0.	*	15	NOV	0625	222	.00	.00	.00	0.
14	NOV	1800	73	.00	.00	.00	0.	*	15	NOV	0630	223	.00	.00	.00	0.
14	NOV	1805	74	.00	.00	.00	0.	*	15	NOV	0635	224	.00	.00	.00	0.
14	NOV	1810	75	.00	.00	.00	0.	*	15	NOV	0640	225	.00	.00	.00	0.
14	NOV	1815	76	.00	.00	.00	0.	*	15	NOV	0645	226	.00	.00	.00	0.
14	NOV	1820	77	.00	.00	.00	0.	*	15	NOV	0650	227	.00	.00	.00	0.
14	NOV	1825	78	.00	.00	.00	0.	*	15	NOV	0655	228	.00	.00	.00	0.
14	NOV	1830	79	.00	.00	.00	0.	*	15	NOV	0700	229	.00	.00	.00	0.
14	NOV	1835	80	.00	.00	.00	0.	*	15	NOV	0705	230	.00	.00	.00	0.
14	NOV	1840	81	.00	.00	.00	0.	*	15	NOV	0710	231	.00	.00	.00	0.
14	NOV	1845	82	.00	.00	.00	0.	*	15	NOV	0715	232	.00	.00	.00	0.
14	NOV	1850	83	.00	.00	.00	0.	*	15	NOV	0720	233	.00	.00	.00	0.
14	NOV	1855	84	.00	.00	.00	0.	*	15	NOV	0725	234	.00	.00	.00	0.
14	NOV	1900	85	.00	.00	.00	0.	*	15	NOV	0730	235	.00	.00	.00	0.
14	NOV	1905	86	.00	.00	.00	0.	*	15	NOV	0735	236	.00	.00	.00	0.
14	NOV	1910	87	.00	.00	.00	0.	*	15	NOV	0740	237	.00	.00	.00	0.
14	NOV	1915	88	.00	.00	.00	0.	*	15	NOV	0745	238	.00	.00	.00	0.
14	NOV	1920	89	.00	.00	.00	0.	*	15	NOV	0750	239	.00	.00	.00	0.
14	NOV	1925	90	.00	.00	.00	0.	*	15	NOV	0755	240	.00	.00	.00	0.
14	NOV	1930	91	.00	.00	.00	0.	*	15	NOV	0800	241	.00	.00	.00	0.
14	NOV	1935	92	.00	.00	.00	0.	*	15	NOV	0805	242	.00	.00	.00	0.
14	NOV	1940	93	.00	.00	.00	0.	*	15	NOV	0810	243	.00	.00	.00	0.
14	NOV	1945	94	.00	.00	.00	0.	*	15	NOV	0815	244	.00	.00	.00	0.
14	NOV	1950	95	.00	.00	.00	0.	*	15	NOV	0820	245	.00	.00	.00	0.
14	NOV	1955	96	.00	.00	.00	0.	*	15	NOV	0825	246	.00	.00	.00	0.
14	NOV	2000	97	.00	.00	.00	0.	*	15	NOV	0830	247	.00	.00	.00	0.
14	NOV	2005	98	.00	.00	.00	0.	*	15	NOV	0835	248	.00	.00	.00	0.
14	NOV	2010	99	.00	.00	.00	0.	*	15	NOV	0840	249	.00	.00	.00	0.
14	NOV	2015	100	.00	.00	.00	0.	*	15	NOV	0845	250	.00	.00	.00	0.
14	NOV	2020	101	.00	.00	.00	0.	*	15	NOV	0850	251	.00	.00	.00	0.
14	NOV	2025	102	.00	.00	.00	0.	*	15	NOV	0855	252	.00	.00	.00	0.
14	NOV	2030	103	.00	.00	.00	0.	*	15	NOV	0900	253	.00	.00	.00	0.
14	NOV	2035	104	.00	.00	.00	0.	*	15	NOV	0905	254	.00	.00	.00	0.
14	NOV	2040	105	.00	.00	.00	0.	*	15	NOV	0910	255	.00	.00	.00	0.
14	NOV	2045	106	.00	.00	.00	0.	*	15	NOV	0915	256	.00	.00	.00	0.
14	NOV	2050	107	.00	.00	.00	0.	*	15	NOV	0920	257	.00	.00	.00	0.
14	NOV	2055	108	.00	.00	.00	0.	*	15	NOV	0925	258	.00	.00	.00	0.
14	NOV	2100	109	.00	.00	.00	0.	*	15	NOV	0930	259	.00	.00	.00	0.
14	NOV	2105	110	.00	.00	.00	0.	*	15	NOV	0935	260	.00	.00	.00	0.
14	NOV	2110	111	.00	.00	.00	0.	*	15	NOV	0940	261	.00	.00	.00	0.
14	NOV	2115	112	.00	.00	.00	0.	*	15	NOV	0945	262	.00	.00	.00	0.
14	NOV	2120	113	.00	.00	.00	0.	*	15	NOV	0950	263	.00	.00	.00	0.
14	NOV	2125	114	.00	.00	.00	0.	*	15	NOV	0955	264	.00	.00	.00	0.
14	NOV	2130	115	.00	.00	.00	0.	*	15	NOV	1000	265	.00	.00	.00	0.
14	NOV	2135	116	.00	.00	.00	0.	*	15	NOV	1005	266	.00	.00	.00	0.
14	NOV	2140	117	.00	.00	.00	0.	*	15	NOV	1010	267	.00	.00	.00	0.
14	NOV	2145	118	.00	.00	.00	0.	*	15	NOV	1015	268	.00	.00	.00	0.
14	NOV	2150	119	.00	.00	.00	0.	*	15	NOV	1020	269	.00	.00	.00	0.
14	NOV	2155	120	.00	.00	.00	0.	*	15	NOV	1025	270	.00	.00	.00	0.
14	NOV	2200	121	.00	.00	.00	0.	*	15	NOV	1030	271	.00	.00	.00	0.
14	NOV	2205	122	.00	.00	.00	0.	*	15	NOV	1035	272	.00	.00	.00	0.
14	NOV	2210	123	.00	.00	.00	0.	*	15	NOV	1040	273	.00	.00	.00	0.
14	NOV	2215	124	.00	.00	.00	0.	*	15	NOV	1045	274	.00	.00	.00	0.
14	NOV	2220	125	.00	.00	.00	0.	*	15	NOV	1050	275	.00	.00	.00	0.
14	NOV	2225	126	.00	.00	.00	0.	*	15	NOV	1055	276	.00	.00	.00	0.
14	NOV	2230	127	.00	.00	.00	0.	*	15	NOV	1100	277	.00	.00	.00	0.
14	NOV	2235	128	.00	.00	.00	0.	*	15	NOV	1105	278	.00	.00	.00	0.
14	NOV	2240	129	.00	.00	.00	0.	*	15	NOV	1110	279	.00	.00	.00	0.
14	NOV	2245	130	.00	.00	.00	0.	*	15	NOV	1115	280	.00	.00	.00	0.
14	NOV	2250	131	.00	.00	.00	0.	*	15	NOV	1120	281	.00	.00	.00	0.
14	NOV	2255	132	.00	.00	.00	0.	*	15	NOV	1125	282	.00	.00	.00	0.
14	NOV	2300	133	.00	.00	.00	0.	*	15	NOV	1130	283	.00	.00	.00	0.
14	NOV	2305	134	.00	.00	.00	0.	*	15	NOV	1135	284	.00	.00	.00	0.
14	NOV	2310	135	.00	.00	.00	0.	*	15	NOV	1140	285	.00	.00	.00	0.
14	NOV	2315	136	.00	.00	.00	0.	*	15	NOV	1145	286	.00	.00	.00	0.
14	NOV	2320	137	.00	.00	.00	0.	*	15	NOV	1150	287	.00	.00	.00	0.
14	NOV	2325	138	.00	.00	.00	0.	*	15	NOV	1155	288	.00	.00	.00	0.
14	NOV	2330	139	.00	.00	.00	0.	*	15	NOV	1200	289	.00	.00	.00	0.
14	NOV	2335	140	.00	.00	.00	0.	*	15	NOV	1205	290	.00	.00	.00	0.
14	NOV	2340	141	.00	.00	.00	0.	*	15	NOV	1210	291	.00	.00	.00	0.
14	NOV	2345	142	.00	.00	.00	0.	*	15	NOV	1215	292	.00	.00	.00	0.
14	NOV	2350	143	.00	.00	.00	0.	*	15	NOV	1220	293	.00	.00	.00	0.
14	NOV	2355	144	.00	.00	.00	0.	*	15	NOV	1225	294	.00	.00	.00	0.
15	NOV	0000	145	.00	.00	.00	0.	*	15	NOV	1230	295	.00	.00	.00	0.
15	NOV	0005	146	.00	.00	.00	0.	*	15	NOV	1235	296	.00	.00	.00	0.
15	NOV	0010	147	.00	.00	.00	0.	*	15	NOV	1240	297	.00	.00	.00	0.
15	NOV	0015	148	.00	.00	.00	0.	*	15	NOV	1245	298	.00	.00	.00	0.
15	NOV	0020	149	.00	.00	.00	0.	*	15	NOV	1250	299	.00	.00	.00	0.
15	NOV	0025	150	.00	.00	.00	0.	*	15	NOV	1255	300	.00	.00	.00	0.
								*								

****

TOTAL RAINFALL = 1.28, TOTAL LOSS = 1.12, TOTAL EXCESS = .15

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	1.	3.17		0.	0.	0.	0.
			(INCHES)	.155	.155	.155	.155
			(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .01 SQ MI

1

2YR6HREXIST.ANS
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	S-2	1.	3.17	0.	0.	0.	.01		

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

```
1*****************************************                                                    ****************************************
 *                                       *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN  1998                *                                                    *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                 *                                                    *        609 SECOND STREET             *
 *                                       *                                                    *     DAVIS, CALIFORNIA 95616          *
 * RUN DATE   24NOV02  TIME  00:53:22    *                                                    *         (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

1                                         HEC-1 INPUT                                          PAGE  1

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

            1         ID       DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
            2         ID       COS NO. 88-PA-2001
            3         ID       HEC ENGINEERING JOB NO. 5843
            4         ID       QS #51-48
            5         ID
            6         ID       THIS HEC-1 RUN IS FOR THE EXISTING CONDITION OF WASH B
            7         ID       USE SCS METHOD
            8         ID       THIS IS FOR THE 10-YR, 6-HR STORM EVENT
            9         ID
           10         IT       5 14NOV01    1200     300

           11         KK     S-2
           12         KM      RUNOFF FROM SUB BASINS 2A AND 2B
           13         BA  0.0085
           14         PH      10             0.58    1.05    1.70    1.90    2.03    2.28
           15         LS       0      77     2.54
           16         UD   0.089
           17         ZZ
1*****************************************                                                    ****************************************
 *                                       *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN  1998                *                                                    *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                 *                                                    *        609 SECOND STREET             *
 *                                       *                                                    *     DAVIS, CALIFORNIA 95616          *
 * RUN DATE   24NOV02  TIME  00:53:22    *                                                    *         (916) 756-1104               *
 *                                       *                                                    *                                      *
 *****************************************                                                    ****************************************


                       DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
                       COS NO. 88-PA-2001
                       HEC ENGINEERING JOB NO. 5843
                       QS #51-48

                       THIS HEC-1 RUN IS FOR THE EXISTING CONDITION OF WASH B
                       USE SCS METHOD
                       THIS IS FOR THE 10-YR, 6-HR STORM EVENT


     IT        HYDROGRAPH TIME DATA
                     NMIN         5  MINUTES IN COMPUTATION INTERVAL
                    IDATE    14NOV 1  STARTING DATE
                    ITIME      1200  STARTING TIME
                       NQ       300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE    15NOV 1  ENDING DATE
                   NDTIME      1255  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

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

```
          **************
          *            *
11 KK     *     S-2    *
          *            *
          **************
                        RUNOFF FROM SUB BASINS 2A AND 2B

             SUBBASIN RUNOFF DATA

13 BA          SUBBASIN CHARACTERISTICS
                    TAREA          .01  SUBBASIN AREA

               PRECIPITATION DATA

14 PH                                 DEPTHS FOR  10-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .58    1.05    1.70    1.90    2.03    2.28     .00     .00     .00     .00     .00     .00

                                              STORM AREA =      .01

15 LS          SCS LOSS RATE
                    STRTL          .60  INITIAL ABSTRACTION
                   CRVNBR        77.00  CURVE NUMBER
                    RTIMP         2.54  PERCENT IMPERVIOUS AREA

16 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG          .09  LAG

                                                  ***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

                                                  UNIT HYDROGRAPH
                                                7 END-OF-PERIOD ORDINATES
                    23.       28.       10.        4.        1.        0.        0.

*****************************************************************************************************************************************************

                                                  HYDROGRAPH AT STATION       S-2

*****************************************************************************************************************************************************
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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
14	NOV	1200	1	.00	.00	.00	0.	15	NOV	0030	151	.00	.00	.00	0.
14	NOV	1205	2	.01	.01	.00	0.	15	NOV	0035	152	.00	.00	.00	0.
14	NOV	1210	3	.01	.01	.00	0.	15	NOV	0040	153	.00	.00	.00	0.
14	NOV	1215	4	.01	.01	.00	0.	15	NOV	0045	154	.00	.00	.00	0.
14	NOV	1220	5	.01	.01	.00	0.	15	NOV	0050	155	.00	.00	.00	0.
14	NOV	1225	6	.01	.01	.00	0.	15	NOV	0055	156	.00	.00	.00	0.
14	NOV	1230	7	.01	.01	.00	0.	15	NOV	0100	157	.00	.00	.00	0.
14	NOV	1235	8	.01	.01	.00	0.	15	NOV	0105	158	.00	.00	.00	0.
14	NOV	1240	9	.01	.01	.00	0.	15	NOV	0110	159	.00	.00	.00	0.
14	NOV	1245	10	.01	.01	.00	0.	15	NOV	0115	160	.00	.00	.00	0.
14	NOV	1250	11	.01	.01	.00	0.	15	NOV	0120	161	.00	.00	.00	0.
14	NOV	1255	12	.01	.01	.00	0.	15	NOV	0125	162	.00	.00	.00	0.
14	NOV	1300	13	.01	.01	.00	0.	15	NOV	0130	163	.00	.00	.00	0.
14	NOV	1305	14	.01	.01	.00	0.	15	NOV	0135	164	.00	.00	.00	0.
14	NOV	1310	15	.01	.01	.00	0.	15	NOV	0140	165	.00	.00	.00	0.
14	NOV	1315	16	.01	.01	.00	0.	15	NOV	0145	166	.00	.00	.00	0.
14	NOV	1320	17	.01	.01	.00	0.	15	NOV	0150	167	.00	.00	.00	0.
14	NOV	1325	18	.01	.01	.00	0.	15	NOV	0155	168	.00	.00	.00	0.
14	NOV	1330	19	.01	.01	.00	0.	15	NOV	0200	169	.00	.00	.00	0.
14	NOV	1335	20	.01	.01	.00	0.	15	NOV	0205	170	.00	.00	.00	0.
14	NOV	1340	21	.01	.01	.00	0.	15	NOV	0210	171	.00	.00	.00	0.
14	NOV	1345	22	.01	.01	.00	0.	15	NOV	0215	172	.00	.00	.00	0.
14	NOV	1350	23	.01	.01	.00	0.	15	NOV	0220	173	.00	.00	.00	0.
14	NOV	1355	24	.01	.01	.00	0.	15	NOV	0225	174	.00	.00	.00	0.
14	NOV	1400	25	.01	.01	.00	0.	15	NOV	0230	175	.00	.00	.00	0.
14	NOV	1405	26	.01	.01	.00	0.	15	NOV	0235	176	.00	.00	.00	0.
14	NOV	1410	27	.01	.01	.00	0.	15	NOV	0240	177	.00	.00	.00	0.
14	NOV	1415	28	.01	.01	.00	0.	15	NOV	0245	178	.00	.00	.00	0.
14	NOV	1420	29	.02	.02	.00	0.	15	NOV	0250	179	.00	.00	.00	0.
14	NOV	1425	30	.02	.02	.00	0.	15	NOV	0255	180	.00	.00	.00	0.
14	NOV	1430	31	.02	.02	.00	0.	15	NOV	0300	181	.00	.00	.00	0.
14	NOV	1435	32	.05	.04	.00	0.	15	NOV	0305	182	.00	.00	.00	0.
14	NOV	1440	33	.05	.05	.00	0.	15	NOV	0310	183	.00	.00	.00	0.
14	NOV	1445	34	.06	.06	.00	0.	15	NOV	0315	184	.00	.00	.00	0.
14	NOV	1450	35	.09	.09	.00	0.	15	NOV	0320	185	.00	.00	.00	0.
14	NOV	1455	36	.12	.12	.00	0.	15	NOV	0325	186	.00	.00	.00	0.
14	NOV	1500	37	.27	.24	.04	1.	15	NOV	0330	187	.00	.00	.00	0.
14	NOV	1505	38	.57	.39	.19	5.	15	NOV	0335	188	.00	.00	.00	0.
14	NOV	1510	39	.19	.10	.09	8.	15	NOV	0340	189	.00	.00	.00	0.
14	NOV	1515	40	.10	.05	.05	6.	15	NOV	0345	190	.00	.00	.00	0.
14	NOV	1520	41	.07	.03	.03	4.	15	NOV	0350	191	.00	.00	.00	0.
14	NOV	1525	42	.06	.03	.03	3.	15	NOV	0355	192	.00	.00	.00	0.
14	NOV	1530	43	.05	.02	.03	2.	15	NOV	0400	193	.00	.00	.00	0.
14	NOV	1535	44	.02	.01	.01	2.	15	NOV	0405	194	.00	.00	.00	0.
14	NOV	1540	45	.02	.01	.01	1.	15	NOV	0410	195	.00	.00	.00	0.
14	NOV	1545	46	.02	.01	.01	1.	15	NOV	0415	196	.00	.00	.00	0.
14	NOV	1550	47	.02	.01	.01	1.	15	NOV	0420	197	.00	.00	.00	0.
14	NOV	1555	48	.01	.01	.01	1.	15	NOV	0425	198	.00	.00	.00	0.
14	NOV	1600	49	.01	.01	.01	1.	15	NOV	0430	199	.00	.00	.00	0.
14	NOV	1605	50	.01	.01	.01	0.	15	NOV	0435	200	.00	.00	.00	0.
14	NOV	1610	51	.01	.01	.01	0.	15	NOV	0440	201	.00	.00	.00	0.
14	NOV	1615	52	.01	.00	.01	0.	15	NOV	0445	202	.00	.00	.00	0.
14	NOV	1620	53	.01	.00	.01	0.	15	NOV	0450	203	.00	.00	.00	0.
14	NOV	1625	54	.01	.00	.01	0.	15	NOV	0455	204	.00	.00	.00	0.
14	NOV	1630	55	.01	.00	.01	0.	15	NOV	0500	205	.00	.00	.00	0.
14	NOV	1635	56	.01	.00	.01	0.	15	NOV	0505	206	.00	.00	.00	0.
14	NOV	1640	57	.01	.00	.01	0.	15	NOV	0510	207	.00	.00	.00	0.
14	NOV	1645	58	.01	.00	.00	0.	15	NOV	0515	208	.00	.00	.00	0.
14	NOV	1650	59	.01	.00	.00	0.	15	NOV	0520	209	.00	.00	.00	0.
14	NOV	1655	60	.01	.00	.00	0.	15	NOV	0525	210	.00	.00	.00	0.
14	NOV	1700	61	.01	.00	.00	0.	15	NOV	0530	211	.00	.00	.00	0.

14	NOV	1705	62	.01	.00	.00	0.	*	15	NOV	0535	212	.00	.00	.00	0.
14	NOV	1710	63	.01	.00	.00	0.	*	15	NOV	0540	213	.00	.00	.00	0.
14	NOV	1715	64	.01	.00	.00	0.	*	15	NOV	0545	214	.00	.00	.00	0.
14	NOV	1720	65	.01	.00	.00	0.	*	15	NOV	0550	215	.00	.00	.00	0.
14	NOV	1725	66	.01	.00	.00	0.	*	15	NOV	0555	216	.00	.00	.00	0.
14	NOV	1730	67	.01	.00	.00	0.	*	15	NOV	0600	217	.00	.00	.00	0.
14	NOV	1735	68	.01	.00	.00	0.	*	15	NOV	0605	218	.00	.00	.00	0.
14	NOV	1740	69	.01	.00	.00	0.	*	15	NOV	0610	219	.00	.00	.00	0.
14	NOV	1745	70	.01	.00	.00	0.	*	15	NOV	0615	220	.00	.00	.00	0.
14	NOV	1750	71	.01	.00	.00	0.	*	15	NOV	0620	221	.00	.00	.00	0.
14	NOV	1755	72	.01	.00	.00	0.	*	15	NOV	0625	222	.00	.00	.00	0.
14	NOV	1800	73	.01	.00	.00	0.	*	15	NOV	0630	223	.00	.00	.00	0.
14	NOV	1805	74	.00	.00	.00	0.	*	15	NOV	0635	224	.00	.00	.00	0.
14	NOV	1810	75	.00	.00	.00	0.	*	15	NOV	0640	225	.00	.00	.00	0.
14	NOV	1815	76	.00	.00	.00	0.	*	15	NOV	0645	226	.00	.00	.00	0.
14	NOV	1820	77	.00	.00	.00	0.	*	15	NOV	0650	227	.00	.00	.00	0.
14	NOV	1825	78	.00	.00	.00	0.	*	15	NOV	0655	228	.00	.00	.00	0.
14	NOV	1830	79	.00	.00	.00	0.	*	15	NOV	0700	229	.00	.00	.00	0.
14	NOV	1835	80	.00	.00	.00	0.	*	15	NOV	0705	230	.00	.00	.00	0.
14	NOV	1840	81	.00	.00	.00	0.	*	15	NOV	0710	231	.00	.00	.00	0.
14	NOV	1845	82	.00	.00	.00	0.	*	15	NOV	0715	232	.00	.00	.00	0.
14	NOV	1850	83	.00	.00	.00	0.	*	15	NOV	0720	233	.00	.00	.00	0.
14	NOV	1855	84	.00	.00	.00	0.	*	15	NOV	0725	234	.00	.00	.00	0.
14	NOV	1900	85	.00	.00	.00	0.	*	15	NOV	0730	235	.00	.00	.00	0.
14	NOV	1905	86	.00	.00	.00	0.	*	15	NOV	0735	236	.00	.00	.00	0.
14	NOV	1910	87	.00	.00	.00	0.	*	15	NOV	0740	237	.00	.00	.00	0.
14	NOV	1915	88	.00	.00	.00	0.	*	15	NOV	0745	238	.00	.00	.00	0.
14	NOV	1920	89	.00	.00	.00	0.	*	15	NOV	0750	239	.00	.00	.00	0.
14	NOV	1925	90	.00	.00	.00	0.	*	15	NOV	0755	240	.00	.00	.00	0.
14	NOV	1930	91	.00	.00	.00	0.	*	15	NOV	0800	241	.00	.00	.00	0.
14	NOV	1935	92	.00	.00	.00	0.	*	15	NOV	0805	242	.00	.00	.00	0.
14	NOV	1940	93	.00	.00	.00	0.	*	15	NOV	0810	243	.00	.00	.00	0.
14	NOV	1945	94	.00	.00	.00	0.	*	15	NOV	0815	244	.00	.00	.00	0.
14	NOV	1950	95	.00	.00	.00	0.	*	15	NOV	0820	245	.00	.00	.00	0.
14	NOV	1955	96	.00	.00	.00	0.	*	15	NOV	0825	246	.00	.00	.00	0.
14	NOV	2000	97	.00	.00	.00	0.	*	15	NOV	0830	247	.00	.00	.00	0.
14	NOV	2005	98	.00	.00	.00	0.	*	15	NOV	0835	248	.00	.00	.00	0.
14	NOV	2010	99	.00	.00	.00	0.	*	15	NOV	0840	249	.00	.00	.00	0.
14	NOV	2015	100	.00	.00	.00	0.	*	15	NOV	0845	250	.00	.00	.00	0.
14	NOV	2020	101	.00	.00	.00	0.	*	15	NOV	0850	251	.00	.00	.00	0.
14	NOV	2025	102	.00	.00	.00	0.	*	15	NOV	0855	252	.00	.00	.00	0.
14	NOV	2030	103	.00	.00	.00	0.	*	15	NOV	0900	253	.00	.00	.00	0.
14	NOV	2035	104	.00	.00	.00	0.	*	15	NOV	0905	254	.00	.00	.00	0.
14	NOV	2040	105	.00	.00	.00	0.	*	15	NOV	0910	255	.00	.00	.00	0.
14	NOV	2045	106	.00	.00	.00	0.	*	15	NOV	0915	256	.00	.00	.00	0.
14	NOV	2050	107	.00	.00	.00	0.	*	15	NOV	0920	257	.00	.00	.00	0.
14	NOV	2055	108	.00	.00	.00	0.	*	15	NOV	0925	258	.00	.00	.00	0.
14	NOV	2100	109	.00	.00	.00	0.	*	15	NOV	0930	259	.00	.00	.00	0.
14	NOV	2105	110	.00	.00	.00	0.	*	15	NOV	0935	260	.00	.00	.00	0.
14	NOV	2110	111	.00	.00	.00	0.	*	15	NOV	0940	261	.00	.00	.00	0.
14	NOV	2115	112	.00	.00	.00	0.	*	15	NOV	0945	262	.00	.00	.00	0.
14	NOV	2120	113	.00	.00	.00	0.	*	15	NOV	0950	263	.00	.00	.00	0.
14	NOV	2125	114	.00	.00	.00	0.	*	15	NOV	0955	264	.00	.00	.00	0.
14	NOV	2130	115	.00	.00	.00	0.	*	15	NOV	1000	265	.00	.00	.00	0.
14	NOV	2135	116	.00	.00	.00	0.	*	15	NOV	1005	266	.00	.00	.00	0.
14	NOV	2140	117	.00	.00	.00	0.	*	15	NOV	1010	267	.00	.00	.00	0.
14	NOV	2145	118	.00	.00	.00	0.	*	15	NOV	1015	268	.00	.00	.00	0.
14	NOV	2150	119	.00	.00	.00	0.	*	15	NOV	1020	269	.00	.00	.00	0.
14	NOV	2155	120	.00	.00	.00	0.	*	15	NOV	1025	270	.00	.00	.00	0.
14	NOV	2200	121	.00	.00	.00	0.	*	15	NOV	1030	271	.00	.00	.00	0.
14	NOV	2205	122	.00	.00	.00	0.	*	15	NOV	1035	272	.00	.00	.00	0.
14	NOV	2210	123	.00	.00	.00	0.	*	15	NOV	1040	273	.00	.00	.00	0.
14	NOV	2215	124	.00	.00	.00	0.	*	15	NOV	1045	274	.00	.00	.00	0.
14	NOV	2220	125	.00	.00	.00	0.	*	15	NOV	1050	275	.00	.00	.00	0.
14	NOV	2225	126	.00	.00	.00	0.	*	15	NOV	1055	276	.00	.00	.00	0.
14	NOV	2230	127	.00	.00	.00	0.	*	15	NOV	1100	277	.00	.00	.00	0.
14	NOV	2235	128	.00	.00	.00	0.	*	15	NOV	1105	278	.00	.00	.00	0.
14	NOV	2240	129	.00	.00	.00	0.	*	15	NOV	1110	279	.00	.00	.00	0.
14	NOV	2245	130	.00	.00	.00	0.	*	15	NOV	1115	280	.00	.00	.00	0.
14	NOV	2250	131	.00	.00	.00	0.	*	15	NOV	1120	281	.00	.00	.00	0.
14	NOV	2255	132	.00	.00	.00	0.	*	15	NOV	1125	282	.00	.00	.00	0.
14	NOV	2300	133	.00	.00	.00	0.	*	15	NOV	1130	283	.00	.00	.00	0.
14	NOV	2305	134	.00	.00	.00	0.	*	15	NOV	1135	284	.00	.00	.00	0.
14	NOV	2310	135	.00	.00	.00	0.	*	15	NOV	1140	285	.00	.00	.00	0.
14	NOV	2315	136	.00	.00	.00	0.	*	15	NOV	1145	286	.00	.00	.00	0.
14	NOV	2320	137	.00	.00	.00	0.	*	15	NOV	1150	287	.00	.00	.00	0.
14	NOV	2325	138	.00	.00	.00	0.	*	15	NOV	1155	288	.00	.00	.00	0.
14	NOV	2330	139	.00	.00	.00	0.	*	15	NOV	1200	289	.00	.00	.00	0.
14	NOV	2335	140	.00	.00	.00	0.	*	15	NOV	1205	290	.00	.00	.00	0.
14	NOV	2340	141	.00	.00	.00	0.	*	15	NOV	1210	291	.00	.00	.00	0.
14	NOV	2345	142	.00	.00	.00	0.	*	15	NOV	1215	292	.00	.00	.00	0.
14	NOV	2350	143	.00	.00	.00	0.	*	15	NOV	1220	293	.00	.00	.00	0.
14	NOV	2355	144	.00	.00	.00	0.	*	15	NOV	1225	294	.00	.00	.00	0.
15	NOV	0000	145	.00	.00	.00	0.	*	15	NOV	1230	295	.00	.00	.00	0.
15	NOV	0005	146	.00	.00	.00	0.	*	15	NOV	1235	296	.00	.00	.00	0.
15	NOV	0010	147	.00	.00	.00	0.	*	15	NOV	1240	297	.00	.00	.00	0.
15	NOV	0015	148	.00	.00	.00	0.	*	15	NOV	1245	298	.00	.00	.00	0.
15	NOV	0020	149	.00	.00	.00	0.	*	15	NOV	1250	299	.00	.00	.00	0.
15	NOV	0025	150	.00	.00	.00	0.	*	15	NOV	1255	300	.00	.00	.00	0.

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.62, TOTAL EXCESS = .64

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 8.	3.17		1.	0.	0.	0.
		(INCHES)	.635	.635	.635	.635
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .01 SQ MI

1

10YR6HREXIST.ANS
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	S-2	8.	3.17	1.	0.	0.	.01		

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

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1*****************************************                     *****************************************
 *                                       *                     *                                       *
 *  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                     *   U.S. ARMY CORPS OF ENGINEERS        *
 *            JUN   1998                 *                     *   HYDROLOGIC ENGINEERING CENTER       *
 *          VERSION 4.1                  *                     *        609 SECOND STREET              *
 *                                       *                     *      DAVIS, CALIFORNIA 95616          *
 * RUN DATE   24NOV02  TIME  00:56:07    *                     *         (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


1                                               HEC-1 INPUT                                            PAGE  1

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

        1           ID        DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
        2           ID        COS NO. 88-PA-2001
        3           ID        HEC ENGINEERING JOB NO. 5843
        4           ID        QS #51-48
        5           ID
        6           ID        THIS HEC-1 RUN IS FOR THE EXISTING CONDITION OF WASH B
        7           ID        USE SCS METHOD
        8           ID        THIS IS FOR THE 100-YR, 6-HR STORM EVENT
        9           ID
       10           IT       5 14NOV01    1200     300

       11           KK     5-2
       12           KM        RUNOFF FROM SUB BASINS 2A AND 2B
       13           BA  0.0085
       14           PH                   0.88    1.61    2.60    2.91    3.11    3.50
       15           LS       0       77  2.54
       16           UD   0.089
       17           ZZ
```


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1*****************************************                     *****************************************
 *                                       *                     *                                       *
 *  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                     *   U.S. ARMY CORPS OF ENGINEERS        *
 *            JUN   1998                 *                     *   HYDROLOGIC ENGINEERING CENTER       *
 *          VERSION 4.1                  *                     *        609 SECOND STREET              *
 *                                       *                     *      DAVIS, CALIFORNIA 95616          *
 * RUN DATE   24NOV02  TIME  00:56:07    *                     *         (916) 756-1104                *
 *                                       *                     *                                       *
 *****************************************                     *****************************************
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                        DREAM CENTER - SCOTTSDALE FIRST ASSEMBLY
                        COS NO. 88-PA-2001
                        HEC ENGINEERING JOB NO. 5843
                        QS #51-48

                        THIS HEC-1 RUN IS FOR THE EXISTING CONDITION OF WASH B
                        USE SCS METHOD
                        THIS IS FOR THE 100-YR, 6-HR STORM EVENT


   IT         HYDROGRAPH TIME DATA
                   NMIN          5  MINUTES IN COMPUTATION INTERVAL
                  IDATE    14NOV 1  STARTING DATE
                  ITIME       1200  STARTING TIME
                     NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE    15NOV 1  ENDING DATE
                 NDTIME       1255  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


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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          **************
          *            *
11 KK     *      S-2   *
          *            *
          **************
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RUNOFF FROM SUB BASINS 2A AND 2B

SUBBASIN RUNOFF DATA

13 BA SUBBASIN CHARACTERISTICS
TAREA .01 SUBBASIN AREA

PRECIPITATION DATA

14 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40						TP-49		
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.88	1.61	2.60	2.91	3.11	3.50	.00	.00	.00	.00	.00	.00

STORM AREA = .01

15 LS SCS LOSS RATE
STRTL .60 INITIAL ABSTRACTION
CRVNBR 77.00 CURVE NUMBER
RTIMP 2.54 PERCENT IMPERVIOUS AREA

16 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .09 LAG

***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
7 END-OF-PERIOD ORDINATES

23.	28.	10.	4.	1.	0.	0.

HYDROGRAPH AT STATION S-2

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
14	NOV	1200	1	.00	.00	.00	0.	15	NOV	0030	151	.00	.00	.00	0.
14	NOV	1205	2	.01	.01	.00	0.	15	NOV	0035	152	.00	.00	.00	0.
14	NOV	1210	3	.01	.01	.00	0.	15	NOV	0040	153	.00	.00	.00	0.
14	NOV	1215	4	.01	.01	.00	0.	15	NOV	0045	154	.00	.00	.00	0.
14	NOV	1220	5	.01	.01	.00	0.	15	NOV	0050	155	.00	.00	.00	0.
14	NOV	1225	6	.01	.01	.00	0.	15	NOV	0055	156	.00	.00	.00	0.
14	NOV	1230	7	.01	.01	.00	0.	15	NOV	0100	157	.00	.00	.00	0.
14	NOV	1235	8	.01	.01	.00	0.	15	NOV	0105	158	.00	.00	.00	0.
14	NOV	1240	9	.01	.01	.00	0.	15	NOV	0110	159	.00	.00	.00	0.
14	NOV	1245	10	.01	.01	.00	0.	15	NOV	0115	160	.00	.00	.00	0.
14	NOV	1250	11	.01	.01	.00	0.	15	NOV	0120	161	.00	.00	.00	0.
14	NOV	1255	12	.01	.01	.00	0.	15	NOV	0125	162	.00	.00	.00	0.
14	NOV	1300	13	.01	.01	.00	0.	15	NOV	0130	163	.00	.00	.00	0.
14	NOV	1305	14	.01	.01	.00	0.	15	NOV	0135	164	.00	.00	.00	0.
14	NOV	1310	15	.01	.01	.00	0.	15	NOV	0140	165	.00	.00	.00	0.
14	NOV	1315	16	.01	.01	.00	0.	15	NOV	0145	166	.00	.00	.00	0.
14	NOV	1320	17	.01	.01	.00	0.	15	NOV	0150	167	.00	.00	.00	0.
14	NOV	1325	18	.01	.01	.00	0.	15	NOV	0155	168	.00	.00	.00	0.
14	NOV	1330	19	.01	.01	.00	0.	15	NOV	0200	169	.00	.00	.00	0.
14	NOV	1335	20	.01	.01	.00	0.	15	NOV	0205	170	.00	.00	.00	0.
14	NOV	1340	21	.02	.01	.00	0.	15	NOV	0210	171	.00	.00	.00	0.
14	NOV	1345	22	.02	.02	.00	0.	15	NOV	0215	172	.00	.00	.00	0.
14	NOV	1350	23	.02	.02	.00	0.	15	NOV	0220	173	.00	.00	.00	0.
14	NOV	1355	24	.02	.02	.00	0.	15	NOV	0225	174	.00	.00	.00	0.
14	NOV	1400	25	.02	.02	.00	0.	15	NOV	0230	175	.00	.00	.00	0.
14	NOV	1405	26	.02	.02	.00	0.	15	NOV	0235	176	.00	.00	.00	0.
14	NOV	1410	27	.02	.02	.00	0.	15	NOV	0240	177	.00	.00	.00	0.
14	NOV	1415	28	.02	.02	.00	0.	15	NOV	0245	178	.00	.00	.00	0.
14	NOV	1420	29	.03	.03	.00	0.	15	NOV	0250	179	.00	.00	.00	0.
14	NOV	1425	30	.03	.03	.00	0.	15	NOV	0255	180	.00	.00	.00	0.
14	NOV	1430	31	.03	.03	.00	0.	15	NOV	0300	181	.00	.00	.00	0.
14	NOV	1435	32	.07	.07	.00	0.	15	NOV	0305	182	.00	.00	.00	0.
14	NOV	1440	33	.08	.08	.00	0.	15	NOV	0310	183	.00	.00	.00	0.
14	NOV	1445	34	.09	.09	.00	0.	15	NOV	0315	184	.00	.00	.00	0.
14	NOV	1450	35	.14	.12	.02	1.	15	NOV	0320	185	.00	.00	.00	0.
14	NOV	1455	36	.19	.15	.04	1.	15	NOV	0325	186	.00	.00	.00	0.
14	NOV	1500	37	.43	.29	.14	4.	15	NOV	0330	187	.00	.00	.00	0.
14	NOV	1505	38	.88	.42	.46	15.	15	NOV	0335	188	.00	.00	.00	0.
14	NOV	1510	39	.30	.11	.19	18.	15	NOV	0340	189	.00	.00	.00	0.
14	NOV	1515	40	.16	.05	.11	13.	15	NOV	0345	190	.00	.00	.00	0.
14	NOV	1520	41	.10	.03	.07	8.	15	NOV	0350	191	.00	.00	.00	0.
14	NOV	1525	42	.09	.03	.06	6.	15	NOV	0355	192	.00	.00	.00	0.
14	NOV	1530	43	.07	.02	.05	4.	15	NOV	0400	193	.00	.00	.00	0.
14	NOV	1535	44	.03	.01	.02	3.	15	NOV	0405	194	.00	.00	.00	0.
14	NOV	1540	45	.03	.01	.02	2.	15	NOV	0410	195	.00	.00	.00	0.
14	NOV	1545	46	.03	.01	.02	2.	15	NOV	0415	196	.00	.00	.00	0.
14	NOV	1550	47	.02	.01	.02	1.	15	NOV	0420	197	.00	.00	.00	0.
14	NOV	1555	48	.02	.01	.02	1.	15	NOV	0425	198	.00	.00	.00	0.
14	NOV	1600	49	.02	.01	.01	1.	15	NOV	0430	199	.00	.00	.00	0.
14	NOV	1605	50	.02	.01	.01	1.	15	NOV	0435	200	.00	.00	.00	0.
14	NOV	1610	51	.02	.01	.01	1.	15	NOV	0440	201	.00	.00	.00	0.
14	NOV	1615	52	.02	.00	.01	1.	15	NOV	0445	202	.00	.00	.00	0.
14	NOV	1620	53	.02	.00	.01	1.	15	NOV	0450	203	.00	.00	.00	0.
14	NOV	1625	54	.02	.00	.01	1.	15	NOV	0455	204	.00	.00	.00	0.
14	NOV	1630	55	.01	.00	.01	1.	15	NOV	0500	205	.00	.00	.00	0.
14	NOV	1635	56	.01	.00	.01	1.	15	NOV	0505	206	.00	.00	.00	0.
14	NOV	1640	57	.01	.00	.01	1.	15	NOV	0510	207	.00	.00	.00	0.
14	NOV	1645	58	.01	.00	.01	1.	15	NOV	0515	208	.00	.00	.00	0.
14	NOV	1650	59	.01	.00	.01	1.	15	NOV	0520	209	.00	.00	.00	0.
14	NOV	1655	60	.01	.00	.01	1.	15	NOV	0525	210	.00	.00	.00	0.
14	NOV	1700	61	.01	.00	.01	1.	15	NOV	0530	211	.00	.00	.00	0.

14 NOV 1705	62	.01	.00	.01	1.	*	15 NOV 0535	212	.00	.00	.00	0.
14 NOV 1710	63	.01	.00	.01	1.	*	15 NOV 0540	213	.00	.00	.00	0.
14 NOV 1715	64	.01	.00	.01	1.	*	15 NOV 0545	214	.00	.00	.00	0.
14 NOV 1720	65	.01	.00	.01	1.	*	15 NOV 0550	215	.00	.00	.00	0.
14 NOV 1725	66	.01	.00	.01	1.	*	15 NOV 0555	216	.00	.00	.00	0.
14 NOV 1730	67	.01	.00	.01	0.	*	15 NOV 0600	217	.00	.00	.00	0.
14 NOV 1735	68	.01	.00	.01	0.	*	15 NOV 0605	218	.00	.00	.00	0.
14 NOV 1740	69	.01	.00	.01	0.	*	15 NOV 0610	219	.00	.00	.00	0.
14 NOV 1745	70	.01	.00	.01	0.	*	15 NOV 0615	220	.00	.00	.00	0.
14 NOV 1750	71	.01	.00	.01	0.	*	15 NOV 0620	221	.00	.00	.00	0.
14 NOV 1755	72	.01	.00	.01	0.	*	15 NOV 0625	222	.00	.00	.00	0.
14 NOV 1800	73	.01	.00	.01	0.	*	15 NOV 0630	223	.00	.00	.00	0.
14 NOV 1805	74	.00	.00	.00	0.	*	15 NOV 0635	224	.00	.00	.00	0.
14 NOV 1810	75	.00	.00	.00	0.	*	15 NOV 0640	225	.00	.00	.00	0.
14 NOV 1815	76	.00	.00	.00	0.	*	15 NOV 0645	226	.00	.00	.00	0.
14 NOV 1820	77	.00	.00	.00	0.	*	15 NOV 0650	227	.00	.00	.00	0.
14 NOV 1825	78	.00	.00	.00	0.	*	15 NOV 0655	228	.00	.00	.00	0.
14 NOV 1830	79	.00	.00	.00	0.	*	15 NOV 0700	229	.00	.00	.00	0.
14 NOV 1835	80	.00	.00	.00	0.	*	15 NOV 0705	230	.00	.00	.00	0.
14 NOV 1840	81	.00	.00	.00	0.	*	15 NOV 0710	231	.00	.00	.00	0.
14 NOV 1845	82	.00	.00	.00	0.	*	15 NOV 0715	232	.00	.00	.00	0.
14 NOV 1850	83	.00	.00	.00	0.	*	15 NOV 0720	233	.00	.00	.00	0.
14 NOV 1855	84	.00	.00	.00	0.	*	15 NOV 0725	234	.00	.00	.00	0.
14 NOV 1900	85	.00	.00	.00	0.	*	15 NOV 0730	235	.00	.00	.00	0.
14 NOV 1905	86	.00	.00	.00	0.	*	15 NOV 0735	236	.00	.00	.00	0.
14 NOV 1910	87	.00	.00	.00	0.	*	15 NOV 0740	237	.00	.00	.00	0.
14 NOV 1915	88	.00	.00	.00	0.	*	15 NOV 0745	238	.00	.00	.00	0.
14 NOV 1920	89	.00	.00	.00	0.	*	15 NOV 0750	239	.00	.00	.00	0.
14 NOV 1925	90	.00	.00	.00	0.	*	15 NOV 0755	240	.00	.00	.00	0.
14 NOV 1930	91	.00	.00	.00	0.	*	15 NOV 0800	241	.00	.00	.00	0.
14 NOV 1935	92	.00	.00	.00	0.	*	15 NOV 0805	242	.00	.00	.00	0.
14 NOV 1940	93	.00	.00	.00	0.	*	15 NOV 0810	243	.00	.00	.00	0.
14 NOV 1945	94	.00	.00	.00	0.	*	15 NOV 0815	244	.00	.00	.00	0.
14 NOV 1950	95	.00	.00	.00	0.	*	15 NOV 0820	245	.00	.00	.00	0.
14 NOV 1955	96	.00	.00	.00	0.	*	15 NOV 0825	246	.00	.00	.00	0.
14 NOV 2000	97	.00	.00	.00	0.	*	15 NOV 0830	247	.00	.00	.00	0.
14 NOV 2005	98	.00	.00	.00	0.	*	15 NOV 0835	248	.00	.00	.00	0.
14 NOV 2010	99	.00	.00	.00	0.	*	15 NOV 0840	249	.00	.00	.00	0.
14 NOV 2015	100	.00	.00	.00	0.	*	15 NOV 0845	250	.00	.00	.00	0.
14 NOV 2020	101	.00	.00	.00	0.	*	15 NOV 0850	251	.00	.00	.00	0.
14 NOV 2025	102	.00	.00	.00	0.	*	15 NOV 0855	252	.00	.00	.00	0.
14 NOV 2030	103	.00	.00	.00	0.	*	15 NOV 0900	253	.00	.00	.00	0.
14 NOV 2035	104	.00	.00	.00	0.	*	15 NOV 0905	254	.00	.00	.00	0.
14 NOV 2040	105	.00	.00	.00	0.	*	15 NOV 0910	255	.00	.00	.00	0.
14 NOV 2045	106	.00	.00	.00	0.	*	15 NOV 0915	256	.00	.00	.00	0.
14 NOV 2050	107	.00	.00	.00	0.	*	15 NOV 0920	257	.00	.00	.00	0.
14 NOV 2055	108	.00	.00	.00	0.	*	15 NOV 0925	258	.00	.00	.00	0.
14 NOV 2100	109	.00	.00	.00	0.	*	15 NOV 0930	259	.00	.00	.00	0.
14 NOV 2105	110	.00	.00	.00	0.	*	15 NOV 0935	260	.00	.00	.00	0.
14 NOV 2110	111	.00	.00	.00	0.	*	15 NOV 0940	261	.00	.00	.00	0.
14 NOV 2115	112	.00	.00	.00	0.	*	15 NOV 0945	262	.00	.00	.00	0.
14 NOV 2120	113	.00	.00	.00	0.	*	15 NOV 0950	263	.00	.00	.00	0.
14 NOV 2125	114	.00	.00	.00	0.	*	15 NOV 0955	264	.00	.00	.00	0.
14 NOV 2130	115	.00	.00	.00	0.	*	15 NOV 1000	265	.00	.00	.00	0.
14 NOV 2135	116	.00	.00	.00	0.	*	15 NOV 1005	266	.00	.00	.00	0.
14 NOV 2140	117	.00	.00	.00	0.	*	15 NOV 1010	267	.00	.00	.00	0.
14 NOV 2145	118	.00	.00	.00	0.	*	15 NOV 1015	268	.00	.00	.00	0.
14 NOV 2150	119	.00	.00	.00	0.	*	15 NOV 1020	269	.00	.00	.00	0.
14 NOV 2155	120	.00	.00	.00	0.	*	15 NOV 1025	270	.00	.00	.00	0.
14 NOV 2200	121	.00	.00	.00	0.	*	15 NOV 1030	271	.00	.00	.00	0.
14 NOV 2205	122	.00	.00	.00	0.	*	15 NOV 1035	272	.00	.00	.00	0.
14 NOV 2210	123	.00	.00	.00	0.	*	15 NOV 1040	273	.00	.00	.00	0.
14 NOV 2215	124	.00	.00	.00	0.	*	15 NOV 1045	274	.00	.00	.00	0.
14 NOV 2220	125	.00	.00	.00	0.	*	15 NOV 1050	275	.00	.00	.00	0.
14 NOV 2225	126	.00	.00	.00	0.	*	15 NOV 1055	276	.00	.00	.00	0.
14 NOV 2230	127	.00	.00	.00	0.	*	15 NOV 1100	277	.00	.00	.00	0.
14 NOV 2235	128	.00	.00	.00	0.	*	15 NOV 1105	278	.00	.00	.00	0.
14 NOV 2240	129	.00	.00	.00	0.	*	15 NOV 1110	279	.00	.00	.00	0.
14 NOV 2245	130	.00	.00	.00	0.	*	15 NOV 1115	280	.00	.00	.00	0.
14 NOV 2250	131	.00	.00	.00	0.	*	15 NOV 1120	281	.00	.00	.00	0.
14 NOV 2255	132	.00	.00	.00	0.	*	15 NOV 1125	282	.00	.00	.00	0.
14 NOV 2300	133	.00	.00	.00	0.	*	15 NOV 1130	283	.00	.00	.00	0.
14 NOV 2305	134	.00	.00	.00	0.	*	15 NOV 1135	284	.00	.00	.00	0.
14 NOV 2310	135	.00	.00	.00	0.	*	15 NOV 1140	285	.00	.00	.00	0.
14 NOV 2315	136	.00	.00	.00	0.	*	15 NOV 1145	286	.00	.00	.00	0.
14 NOV 2320	137	.00	.00	.00	0.	*	15 NOV 1150	287	.00	.00	.00	0.
14 NOV 2325	138	.00	.00	.00	0.	*	15 NOV 1155	288	.00	.00	.00	0.
14 NOV 2330	139	.00	.00	.00	0.	*	15 NOV 1200	289	.00	.00	.00	0.
14 NOV 2335	140	.00	.00	.00	0.	*	15 NOV 1205	290	.00	.00	.00	0.
14 NOV 2340	141	.00	.00	.00	0.	*	15 NOV 1210	291	.00	.00	.00	0.
14 NOV 2345	142	.00	.00	.00	0.	*	15 NOV 1215	292	.00	.00	.00	0.
14 NOV 2350	143	.00	.00	.00	0.	*	15 NOV 1220	293	.00	.00	.00	0.
14 NOV 2355	144	.00	.00	.00	0.	*	15 NOV 1225	294	.00	.00	.00	0.
15 NOV 0000	145	.00	.00	.00	0.	*	15 NOV 1230	295	.00	.00	.00	0.
15 NOV 0005	146	.00	.00	.00	0.	*	15 NOV 1235	296	.00	.00	.00	0.
15 NOV 0010	147	.00	.00	.00	0.	*	15 NOV 1240	297	.00	.00	.00	0.
15 NOV 0015	148	.00	.00	.00	0.	*	15 NOV 1245	298	.00	.00	.00	0.
15 NOV 0020	149	.00	.00	.00	0.	*	15 NOV 1250	299	.00	.00	.00	0.
15 NOV 0025	150	.00	.00	.00	0.	*	15 NOV 1255	300	.00	.00	.00	0.

****

TOTAL RAINFALL = 3.50, TOTAL LOSS = 2.02, TOTAL EXCESS = 1.48

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
18.	3.17	(CFS)	1.	0.	0.	0.
		(INCHES)	1.482	1.483	1.483	1.483
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = .01 SQ MI

1

100YR6HREXIST.ANS
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	S-2	18.	3.17	1.	0.	0.	.01		

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

Project DREAM CENTER
Client
Task PRE-DEVELOPED WASH CAPACITY

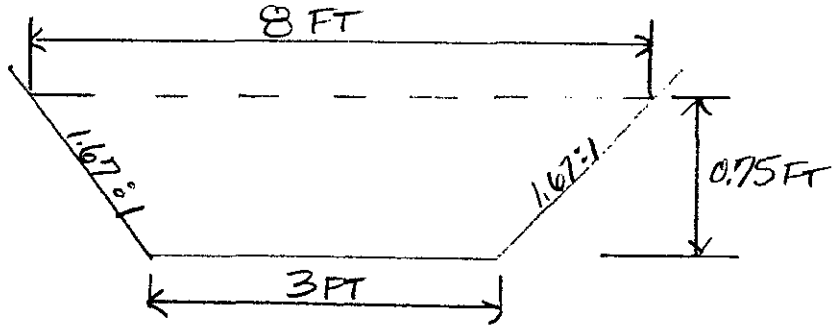
HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

WASH A

- DUE TO SURFACE RUNOFF FROM PIMA ROAD (NOT A WASH)
- SEE IMAGE: (7/16/01) 1 - LOOKING UPSTREAM @ PIMA RD
  2 - LOOKING DOWNSTREAM FROM PIMA RD
  SEE IMAGE KEY MAP FOR EST. LOCATIONS.

CROSS SECTION



MANNING'S n ≈ 0.045 - 0.055

VEGETATION → THICK

SLOPE → ≈ 3.3%

SEE FLOW MASTER RESULTS FOR CAPACITY

Wash A
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash A
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.045	
Channel Slope	0.033000	ft/ft
Depth	0.75	ft
Left Side Slope	1.670000	H : V
Right Side Slope	1.670000	H : V
Bottom Width	3.00	ft

Results		
Discharge	12.67	cfs
Flow Area	3.19	ft^2
Wetted Perimeter	5.92	ft
Top Width	5.51	ft
Critical Depth	0.71	ft
Critical Slope	0.039436	ft/ft
Velocity	3.97	ft/s
Velocity Head	0.25	ft
Specific Energy	1.00	ft
Froude Number	0.92	
Flow is subcritical.		

Project DREAM CENTER
Client
Task PRE - DEVELOPED WASH CAPACITY

HUITT ZOLLARS INCORPORATED

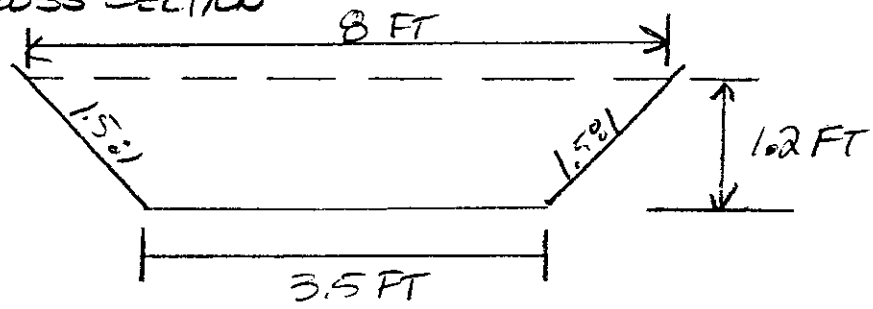
Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

WASH B

- FLOWLINE FILLED UPSTREAM OF PIMA RD BY ROADWAY CONSTRUCTION
- SHEET FLOWS ONTO ROADWAY
- FLOWLINE DOWNSTREAM OF PIMA RD MINIMAL DUE TO PAVEMENT RUNOFF

- SEE IMAGES 3 & 4 (7/16/01
  3 - LOOKING DOWNSTREAM FROM PIMA RD
  4 - LOOKING UPSTREAM @ PIMA RD

CROSS SECTION



MANNING'S $n \approx 0.045 - 0.05$

VEGETATION ⇒ THICK

SLOPE → $\approx 2.5\%$

SEE FLOW MASTER RESULTS FOR CAPACITY

Wash B
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash B
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.045	
Channel Slope	0.025000	ft/ft
Depth	1.20	ft
Left Side Slope	1.500000	H : V
Right Side Slope	1.500000	H : V
Bottom Width	3.50	ft

Results		
Discharge	28.92	cfs
Flow Area	6.36	ft^2
Wetted Perimeter	7.83	ft
Top Width	7.10	ft
Critical Depth	1.09	ft
Critical Slope	0.035584	ft/ft
Velocity	4.55	ft/s
Velocity Head	0.32	ft
Specific Energy	1.52	ft
Froude Number	0.85	
Flow is subcritical.		

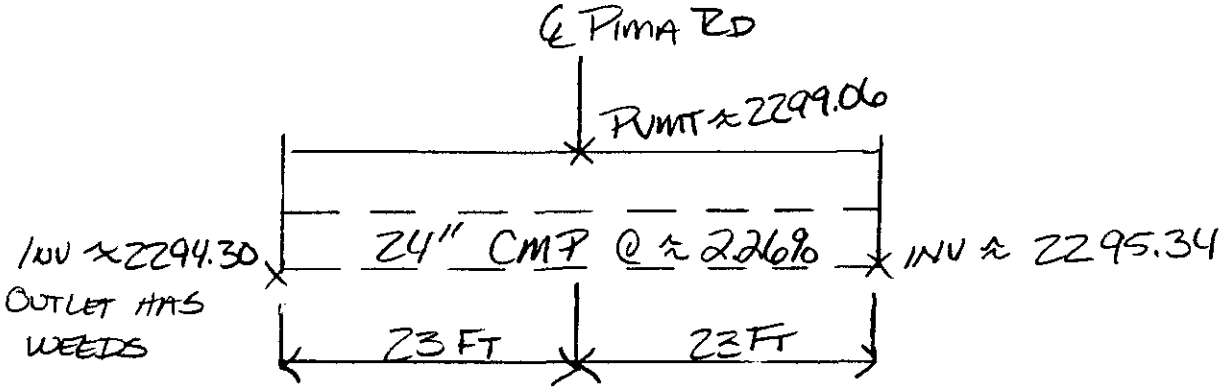
Project DREAM CENTER
Client
Task PRE-DEVELOPED WASH CAPACITY

HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

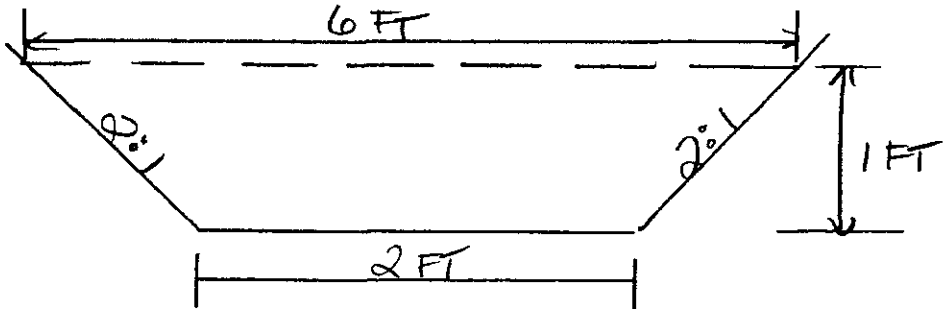
WASH C

- UPSTREAM IS 24" CMP CULVERT @ PIMA RD



- SEE IMAGES: (7/16/01)
  5 - CULVERT OUTLET LOOKING UPSTREAM
  6 - LOOKING DOWNSTREAM FROM PIMA RD
  7 - LOOKING UPSTREAM @ PIMA RD

CROSS SECTION



MANNING'S $n \approx 0.045$

VEGETATION ⇒ THICK

SLOPE ⇒ ≈ 3.3%

SEE FLOW MASTER RESULTS FOR CAPACITY.

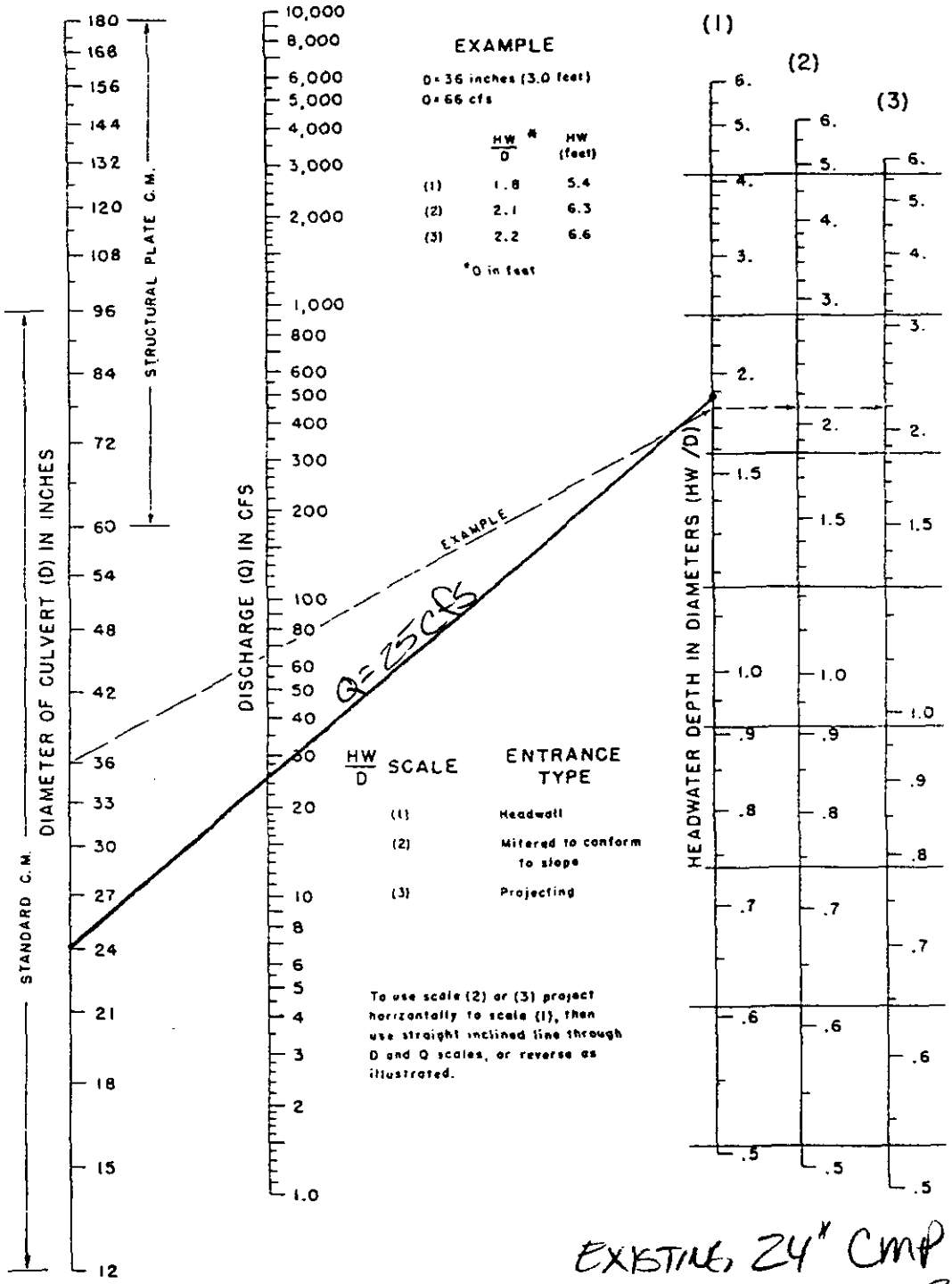
SEE FIG. 5.21 FOR CAPACITY OF 24" CULVERT

Wash C
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash C
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.045	
Channel Slope	0.033000	ft/ft
Depth	1.00	ft
Left Side Slope	2.000000	H : V
Right Side Slope	2.000000	H : V
Bottom Width	2.00	ft

Results		
Discharge	17.41	cfs
Flow Area	4.00	ft^2
Wetted Perimeter	6.47	ft
Top Width	6.00	ft
Critical Depth	0.97	ft
Critical Slope	0.037666	ft/ft
Velocity	4.35	ft/s
Velocity Head	0.29	ft
Specific Energy	1.29	ft
Froude Number	0.94	
Flow is subcritical.		



EXISTING 24" CMP

$\frac{HW}{D} = \frac{3.72}{2} = 1.86$

ENTRANCE = HEADWALL

Figure 5.21
Headwater Depth for C.M. Pipe with Inlet Control
(USDOT, FHWA, HDS-5, 1985)

Project DREAM CENTER
Client
Task PEER REVIEWED WASH CAPACITY

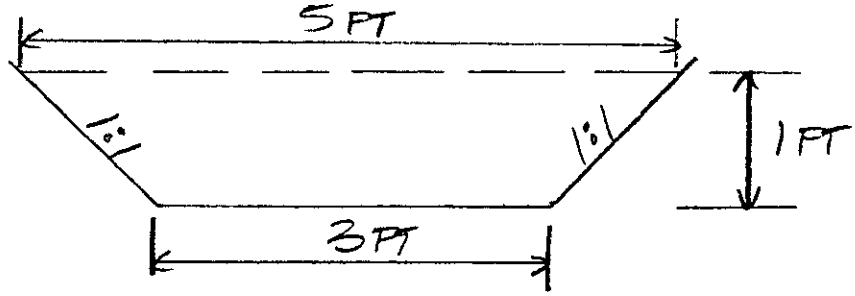
HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

WASH D

- DUE TO PAVEMENT RUNOFF FROM VIA DONA ALONG WEST SIDE OF PIMA RD.
- SEE IMAGES: (7/16/01) 8 – LOOKING UPSTREAM @ PIMA RD
  9 – LOOKING DOWNSTREAM FROM PIMA RD

CROSS SECTION



MANNING'S $n \approx 0.045 - 0.05$

VEGETATION ⇒ THICK

SLOPE ⇒ ± 5.0%

SEE FLOW MASTER FOR CAPACITY

Wash D
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash D
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.045	
Channel Slope	0.050000	ft/ft
Depth	1.00	ft
Left Side Slope	1.000000	H : V
Right Side Slope	1.000000	H : V
Bottom Width	3.00	ft

Results		
Discharge	22.98	cfs
Flow Area	4.00	ft^2
Wetted Perimeter	5.83	ft
Top Width	5.00	ft
Critical Depth	1.08	ft
Critical Slope	0.038514	ft/ft
Velocity	5.74	ft/s
Velocity Head	0.51	ft
Specific Energy	1.51	ft
Froude Number	1.13	
Flow is supercritical.		

Project DREAM CENTER
Client
Task PRE-DEVELOPED WASH CAPACITY

HUITT ZOLLARS INCORPORATED

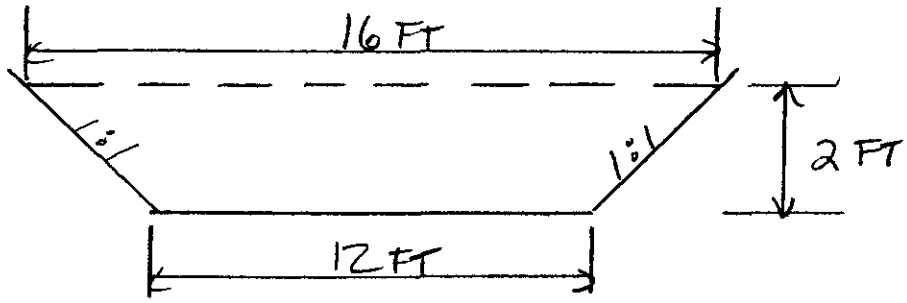
Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

WASH E

- MAJOR WASH
- WELL DEFINED BOTTOM (SAND) W/ VEGETATED BANKS

- SEE IMAGES: 10 - LOOKING DOWNSTREAM
  11 - LOOKING UPSTREAM

CROSS SECTION



MANNING'S n ≈ 0.035 - 0.04

VEGETATION ⇒ SANDY BOTTOM W/ VEGETATED BANKS

SLOPE ⇒ ≈ 2.5%

SEE FLOW RATE RESULTS FOR CAPACITY

Wash E
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash E
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.035	
Channel Slope	0.025000	ft/ft
Depth	2.00	ft
Left Side Slope	1.000000	H : V
Right Side Slope	1.000000	H : V
Bottom Width	12.00	ft

Results		
Discharge	255.59	cfs
Flow Area	28.00	ft²
Wetted Perimeter	17.66	ft
Top Width	16.00	ft
Critical Depth	2.26	ft
Critical Slope	0.016482	ft/ft
Velocity	9.13	ft/s
Velocity Head	1.29	ft
Specific Energy	3.29	ft
Froude Number	1.22	
Flow is supercritical.		

Project DREAM CENTER
Client
Task PRE-DEVELOPED WASH CAPACITY

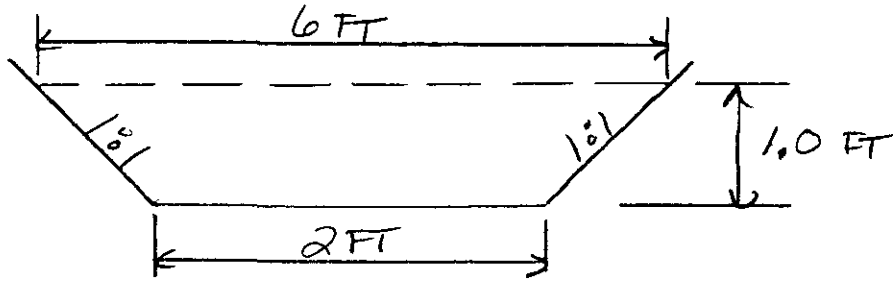
HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

WASH F

- RUNOFF FROM NORTH PROPERTY LINE UP TO VIA DORA RD
- SEE IMAGES: 12 - LOOKING DOWNSTREAM (7/16/01) 13 - LOOKING UPSTREAM

CROSS SECTION



MANNING'S $n \approx 0.04$

VEGETATION → THICK ON SIDE SLOPES
SOME IN WASH

SLOPE → ≈ 4.0%

SEE FLOW MASTER RESULTS FOR CAPACITY

Wash F
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash F
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.040	
Channel Slope	0.040000	ft/ft
Depth	1.00	ft
Left Side Slope	1.000000	H : V
Right Side Slope	1.000000	H : V
Bottom Width	2.00	ft

Results		
Discharge	16.23	cfs
Flow Area	3.00	ft^2
Wetted Perimeter	4.83	ft
Top Width	4.00	ft
Critical Depth	1.06	ft
Critical Slope	0.032687	ft/ft
Velocity	5.41	ft/s
Velocity Head	0.45	ft
Specific Energy	1.45	ft
Froude Number	1.10	
Flow is supercritical.		

Project Dream Center
Client
Task FOR - DETAILED WASH CAPACITY

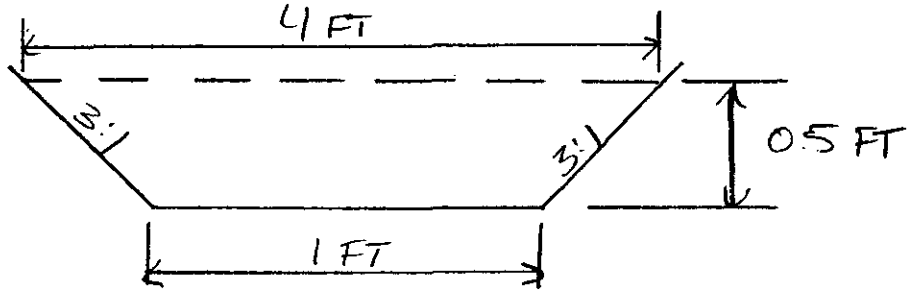
HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By TN Date 7/16/01
Chkd Date
Sheet of

WASH G

- COLLECTS STORM WATER FROM SMALL SUB-BASIN ON SITE
- SEE IMAGES # 16 - LOOKING DOWNSTREAM (7/16/01) 17 - LOOKING UPSTREAM

CROSS SECTION



MANNING'S η = 0.045

VEGETATION → MODERATE TO THICK

SLOPE → ≈ 5.0%

SEE FLOW MASTER RESULTS FOR CAPACITY

Wash G
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Wash G
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.045	
Channel Slope	0.050000	ft/ft
Depth	0.50	ft
Left Side Slope	3.000000	H : V
Right Side Slope	3.000000	H : V
Bottom Width	1.00	ft

Results		
Discharge	4.14	cfs
Flow Area	1.25	ft^2
Wetted Perimeter	4.16	ft
Top Width	4.00	ft
Critical Depth	0.51	ft
Critical Slope	0.045585	ft/ft
Velocity	3.31	ft/s
Velocity Head	0.17	ft
Specific Energy	0.67	ft
Froude Number	1.04	
Flow is supercritical.		

Project DEERM CENTER
Client
Task PRE-DEVELOPED WASH CAPACITY

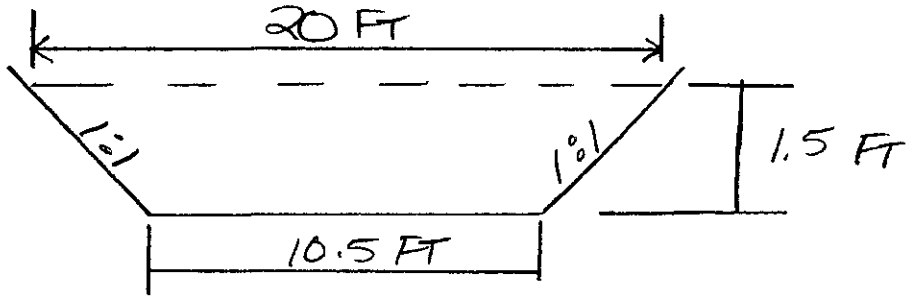
HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By JN Date 7/16/01
Chkd Date
Sheet of

OUTLET FOR WASHES C, D, E + F

- OUTLET @ SOUTH WEST CORNER OF SITE + DRAINS INTO RAWHIDE WASH
- SEE IMAGES: 14 - LOOKING DOWNSTREAM
  15 - LOOKING UPSTREAM

CROSS SECTION



MANNING'S n = 0.035 (n_{MAIN})
0.045 (n_{OB})

VEGETATION → SANDY BOTTOM W/ HEAVY OVERGROWTH

SLOPE → $\approx$ 3.2%

SEE FLOWMASTER RESULTS FOR CAPACITY

Outlet C, D, E & F
Worksheet for Trapezoidal Channel

Project Description	
Project File	g:\proj\05126501\docs\drainage report\wash.fm2
Worksheet	Outlet C, D, E & F
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.035	
Channel Slope	0.032000	ft/ft
Depth	1.50	ft
Left Side Slope	1.000000	H : V
Right Side Slope	1.000000	H : V
Bottom Width	10.50	ft

Results		
Discharge	156.16	cfs
Flow Area	18.00	ft²
Wetted Perimeter	14.74	ft
Top Width	13.50	ft
Critical Depth	1.79	ft
Critical Slope	0.017578	ft/ft
Velocity	8.68	ft/s
Velocity Head	1.17	ft
Specific Energy	2.67	ft
Froude Number	1.32	
Flow is supercritical.		

Project DREAM CENTER
Client
Task PRE-DEVELOPED WASH CAPACITY

HUITT ZOLLARS INCORPORATED

Job No. 05-1265-01
By JN Date 7/16/01
Chkd Date
Sheet of

USE CITY OF SCOTTSDALE DESIGN STANDARDS AND POLICIES MANUAL (DSPM)

PER SECT 2-107
"50 C.F.S. CAPACITY WASHES WITHIN ESL AREAS"

IT REQUIRES THAT WASHES WITHIN THE ESL AREA THAT HAVE A 50 C.F.S OR GREATER CAPACITY BE MAINTAINED IN THEIR NATURAL STATE AND THEIR 100-YR FLOODPLAINS BE DEDICATED TO THE CITY AS DRAINAGE AND FLOOD CONTROL EASEMENTS.

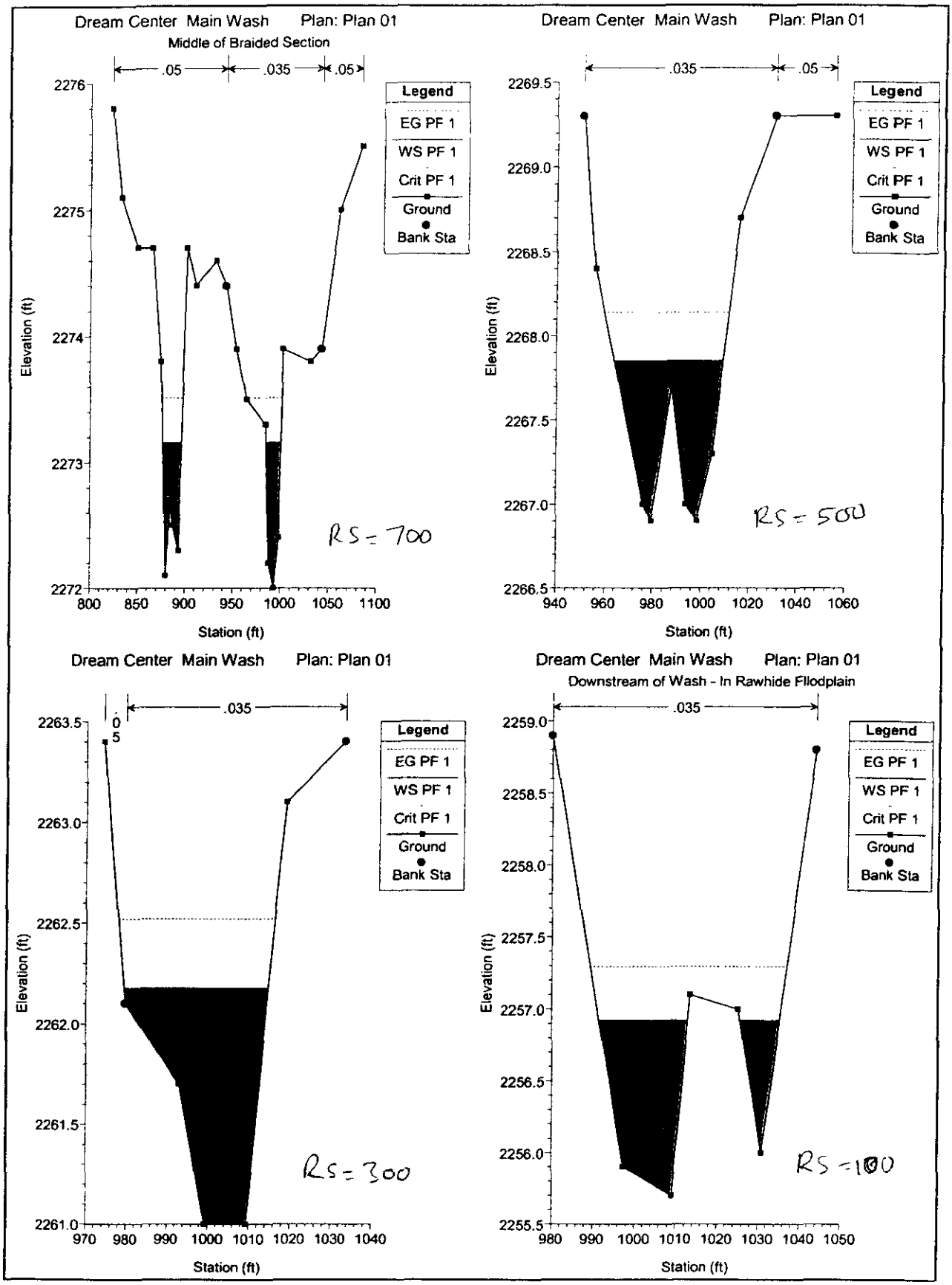
LOOKING @ THE RESULTS FROM FLOWMASTER FOR BANKFULL FLOW CALCULATIONS ONLY WASH E HAS A CAPACITY GREATER THAN 50 C.F.S

THE 100-YR FLOODPLAIN DELINEATION CAN BE SEEN ON THE EXISTING DRAINAGE MAP (EXHIBIT 2)

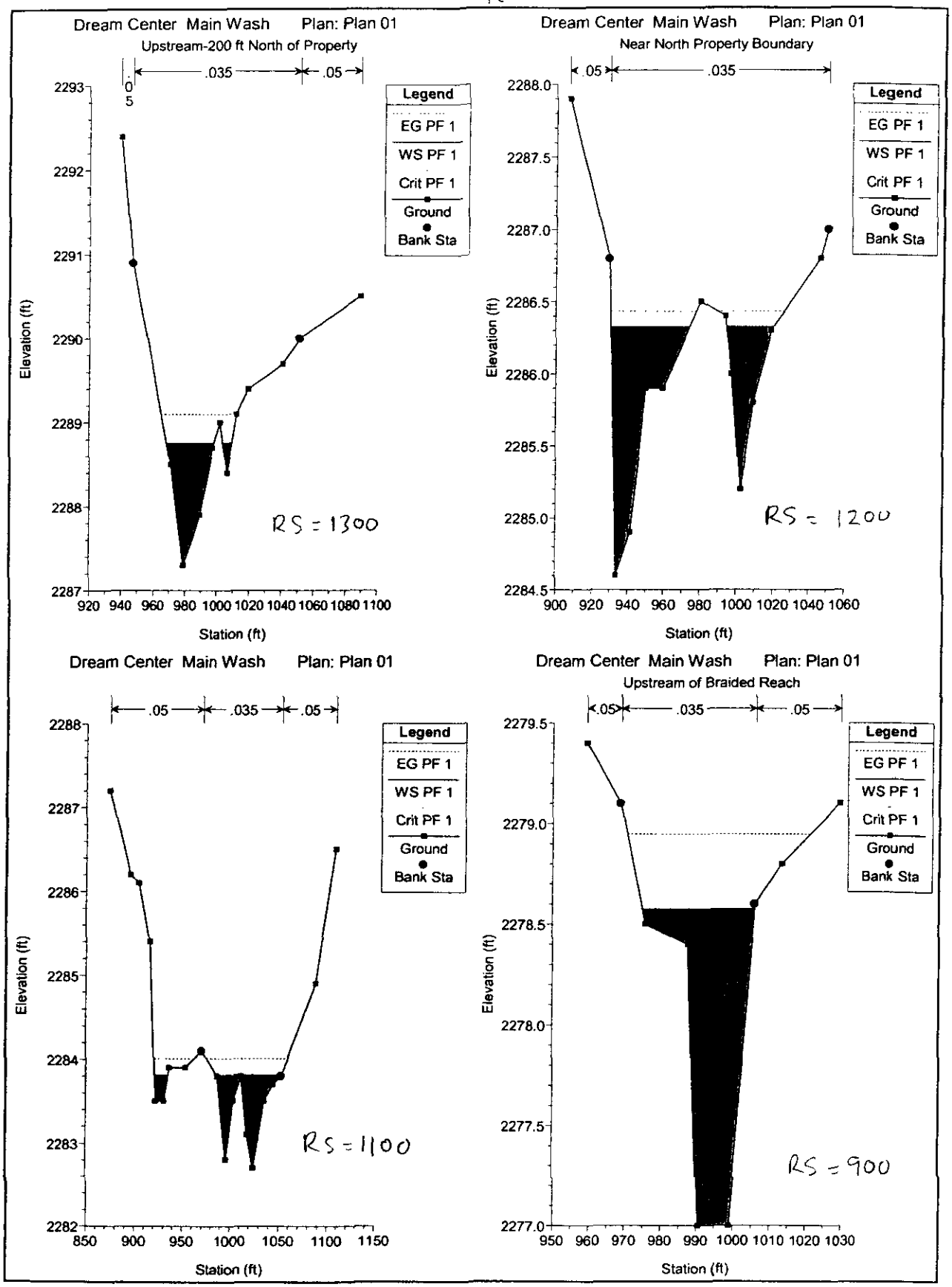
HEC-RAS Plan: Exist24H River: Dream Center Was Reach: one Profile: PF 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Vel Chnl	Flow Area	Top Width	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)
one	1300	112.00	2287.30	2288.76	2288.76	4.69	23.86	35.39	1.01	968.57	1009.56
one	1200	112.00	2284.60	2286.33	2286.07	2.64	42.45	69.68	0.60	930.76	1020.75
one	1100	112.00	2282.70	2283.81	2283.81	3.63	32.69	81.74	0.97	921.59	1054.00
one	900	112.00	2277.00	2278.58	2278.58	4.88	22.95	31.13	1.00	974.96	1006.09
one	700	112.00	2272.00	2273.16	2273.16	5.47	25.68	35.21	1.05	876.77	1000.52
one	500	112.00	2266.90	2267.85	2267.85	4.30	26.03	45.40	1.00	964.01	1009.41
one	300	112.00	2261.00	2262.18	2262.18	4.70	23.86	35.29	1.00	979.48	1014.77
one	100	112.00	2255.70	2256.92	2256.92	4.90	22.85	31.06	1.01	991.54	1035.31

$Q_{100} = 112$ cfs


Dream Center Main Wash Plan: Plan 01
Middle of Braided Section
.05
.035
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
RS = 700
Dream Center Main Wash Plan: Plan 01
.035
.05
RS = 500
Dream Center Main Wash Plan: Plan 01
.035
RS = 300
Dream Center Main Wash Plan: Plan 01
Downstream of Wash - In Rawhide Fllodplain
.035
RS = 100

$Q_{100} = 112$ cfs


Dream Center Main Wash Plan: Plan 01
Upstream-200 ft North of Property
.035
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
RS = 1300
Elevation (ft)
Station (ft)
Dream Center Main Wash Plan: Plan 01
Near North Property Boundary
.05
.035
RS = 1200
Dream Center Main Wash Plan: Plan 01
.05
.035
.05
RS = 1100
Dream Center Main Wash Plan: Plan 01
Upstream of Braided Reach
RS = 900

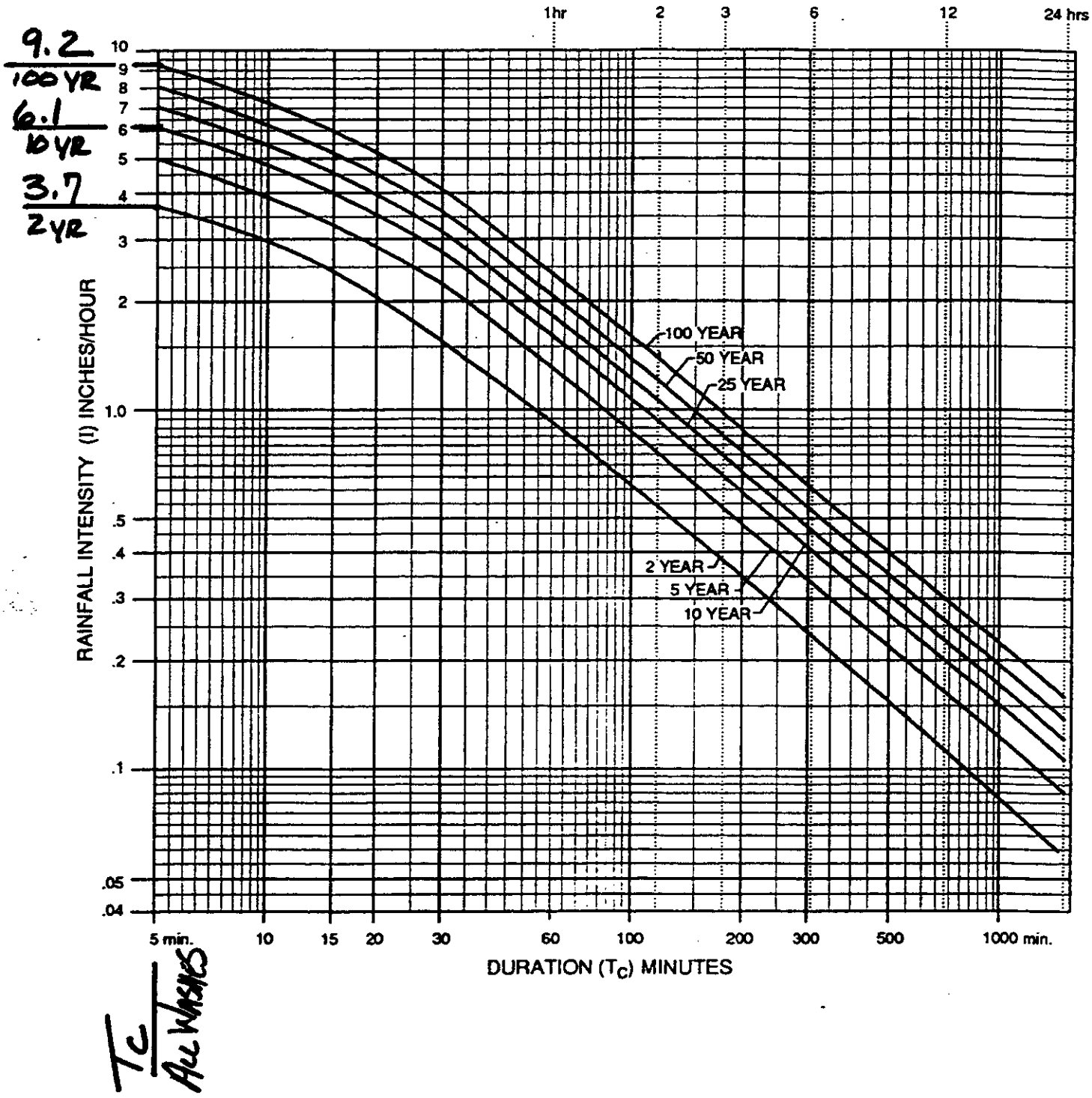


FIGURE 2.2-13

Rainfall Intensity (I) Values for Use in Rational Method

Source: Hydrologic Design Manual for Maricopa County

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: PT @ C WASH A

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 1 OFFSITE

DESIGN DATA

DESIGN FREQUENCY:	(2) | 5 | (10) | 25 | 50 | (100)		YEARS
DRAINAGE AREA:	A1	0.9159	ACRES
	A2	—	ACRES
	A3	—	ACRES
	TOTAL (A)	0.9159	ACRES
DRAINAGE LENGTH:		—	FEET
ELEVATION:			
TOP OF DRAINAGE AREA:		—	FEET
AT STRUCTURE		—	FEET
DRAINAGE AREA SLOPE:		—	PERCENT
HYDROLOGIC SOIL GROUP:		"TYPE C" FOR UNDISTURBED DESERT	

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F):	(1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)		
TIME OF CONCENTRATION:	T_c	5	MINUTES
RAINFALL INTENSITY (I):	3.7 | 6.1 | | 9.2		INCHES/HOUR (Figure 2.2-13)
RUNOFF COEFFICIENT (C):	C1	0.48 PRE-DEVELOPED	
	C2	—	
	C3	—	
WEIGHTED RUNOFF COEFFICIENT (C_w):	C_w	0.48	
PEAK DISCHARGE $Q_p = C_wIA(F)$:	1.63 | 2.68 | | 4.04		cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: C WASH A

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 1

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 1.6936 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 1.6936 ACRES

DRAINAGE LENGTH: 330 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: 3.3 PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25) — FOR POST-DEVELOPED CONDITION ONLY

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | 9.2 INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: 3.01 | 4.96 | 7.48 cfs

\+ 1.63 | 2.68 | 4.04 OFFSITE

4.64 | 7.64 | 11.52

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: PC @ C WASH B

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 2 OFFSITE

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 1.4428 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 1.4428 ACRES

DRAINAGE LENGTH: — FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: — PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | 9.2 INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_w IA(F)$: 2.56 | 4.22 | 6.37 cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

SEE HEC-1

FIGURE 2.2-18

Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: @ W/ASH B

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUB AREA 2

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 4.0200 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 4.0200 ACRES

DRAINAGE LENGTH: 1080 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: 2.50 PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | | 9.2 INCHES/HOU (Figure 2.2-13

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: 7.14 | 11.77 | 17.75 cfs

+ 2.56 | 4.22 | 6.37 OFFSITE

9.70 | 15.99 | 24.12

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

SEE HEC-1

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: R@G WASH C

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 3 OFFSITE

DESIGN DATA

DESIGN FREQUENCY: | (2) | 5 | (10) | 25 | 50 | (100) | YEARS

DRAINAGE AREA:
- A1 3.4975 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 3.4975 ACRES

DRAINAGE LENGTH: — FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: — PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): | (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25) |

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): | 3.7 | | 6.1 | | | 9.2 | INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_w IA(F)$: | 6.21 | | 10.24 | | | 15.44 | cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: E WASH C

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 3

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 2.1675 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 2.1675 ACRES

DRAINAGE LENGTH: 667 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: 3.3 PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F):	(1.00)	1.00	(1.00)	1.10	1.20	(1.25)	
TIME OF CONCENTRATION: T_c	5						MINUTES
RAINFALL INTENSITY (I):	3.7		6.1			9.2	INCHES/HOUR (Figure 2.2-13)
RUNOFF COEFFICIENT (C): C1	0.48 PRE-DEVELOPED						
C2	—						
C3	—						
WEIGHTED RUNOFF COEFFICIENT (C_w): C_w	0.48						
PEAK DISCHARGE $Q_p = C_wIA(F)$:	3.85		6.35			9.57	cfs
	+ 6.21		10.24			15.44	OFFSITE
	1006		16.59			25.01	

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: R @ C WASH D

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 4 OFFSITE

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 1.2759 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 1.2759 ACRES

DRAINAGE LENGTH: — FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: — PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): (3.7) | (6.1) | | (9.2) INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: (2.27) | (3.74) | | (5.63) cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: ℄ WASH D

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 4

DESIGN DATA

DESIGN FREQUENCY: | (2) | 5 | (10) | 25 | 50 | (100) | YEARS

DRAINAGE AREA:
- A1 2.1672 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 2.1672 ACRES

DRAINAGE LENGTH: 687 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: 5.0 PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): | (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25) |

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): | 3.7 | | 6.1 | | | 9.2 | INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: | 3.85 | | 6.35 | | | 9.57 | cfs

	+ 2.27	3.74	5.63 OFFSITE
	6.12	10.09	15.20

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: ℄ WASH E

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 5

ONSITE 4.9119 ACRES
OFFSITE 99.3516 ACRES
% ONSITE = 4.71

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
A1 104.2635 ACRES
A2 — ACRES
A3 — ACRES
TOTAL (A) 104.2635 ACRES

DRAINAGE LENGTH: 7420 FEET

ELEVATION:
TOP OF DRAINAGE AREA: — FEET
AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: 2.43 PERCENT

HYDROLOGIC SOIL GROUP: _____

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | 9.2 INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
C1 X
C2 X
C3 X

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w _____

PEAK DISCHARGE $Q_p = C_wIA(F)$: 16 | 57 | 112 cfs *
15 54 107 OFFSITE BY 96 ACRES

* SEE UPPER RAWHIDE WASH – FLOODPLAIN DELINEATION STUDY BY KIMLEY-HORN, DATED JUNE 2001 (SEE APPENDIX E)

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: RCG WASH F

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 6 OFFSITE

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 0.7574 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 0.7574 ACRES

DRAINAGE LENGTH: — FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: — PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F): (1.00) | 1.00 | (1.00) | 1.10 | 1.20 | 1.25

TIME OF CONCENTRATION: T_c 5 MINUTES

RAINFALL INTENSITY (I): 3.7 | 6.1 | 9.2 INCHES/HOUR (Figure 2.2-13)

RUNOFF COEFFICIENT (C):
- C1 0.48 PRE-DEVELOPED
- C2 —
- C3 —

WEIGHTED RUNOFF COEFFICIENT (C_w): C_w 0.48

PEAK DISCHARGE $Q_p = C_wIA(F)$: 1.35 | 2.22 | 3.34 cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18

Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: G WASH F

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 6

DESIGN DATA

DESIGN FREQUENCY: (2) | 5 | (10) | 25 | 50 | (100) YEARS

DRAINAGE AREA:
- A1 2.5782 ACRES
- A2 — ACRES
- A3 — ACRES
- TOTAL (A) 2.5782 ACRES

DRAINAGE LENGTH: 837 FEET

ELEVATION:
- TOP OF DRAINAGE AREA: — FEET
- AT STRUCTURE — FEET

DRAINAGE AREA SLOPE: 4.0 PERCENT

HYDROLOGIC SOIL GROUP: "TYPE C" FOR UNDISTURBED DESERT

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F):	(1.00)	1.00	(1.00)	1.10	1.20	(1.25)	
TIME OF CONCENTRATION: T_c	5						MINUTES
RAINFALL INTENSITY (I):	3.7		6.1			9.2	INCHES/HOUR (Figure 2.2-13)
RUNOFF COEFFICIENT (C): C1	0.48 PRE-DEVELOPED						
C2	—						
C3	—						
WEIGHTED RUNOFF COEFFICIENT (C_w): C_w	0.48						
PEAK DISCHARGE $Q_p = C_wIA(F)$:	4.58		7.55			11.39	cfs
	+ 1.35		2.22			3.34	OFFSITE
	5.93		9.77			14.73	

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: ℄ WASH G

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 7

DESIGN DATA

DESIGN FREQUENCY:		(2) | 5 | (10) | 25 | 50 | (100)	YEARS
DRAINAGE AREA:	A1	1.1597	ACRES
	A2	—	ACRES
	A3	—	ACRES
	TOTAL (A)	1.1597	ACRES
DRAINAGE LENGTH:		365	FEET
ELEVATION:			
TOP OF DRAINAGE AREA:		—	FEET
AT STRUCTURE		—	FEET
DRAINAGE AREA SLOPE:		5.0	PERCENT
HYDROLOGIC SOIL GROUP:		"TYPE C" FOR UNDISTURBED DESERT	

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F):		(1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)	
TIME OF CONCENTRATION:	T_c	5	MINUTES
RAINFALL INTENSITY (I):		3.7 | 6.1 | | 9.2	INCHES/HOUR (Figure 2.2-13)
RUNOFF COEFFICIENT (C):	C1	0.48 PRE-DEVELOPED	
	C2	—	
	C3	—	
WEIGHTED RUNOFF COEFFICIENT (C_w):	C_w	0.48	
PEAK DISCHARGE $Q_p = C_wIA(F)$:		2.06 | 3.40 | | 5.12	cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

CITY OF SCOTTSDALE

HYDROLOGIC DESIGN DATA RECORD
RATIONAL METHOD

LOCATION DATA

PROJECT: 05-1265-01 CONCENTRATION POINT: @ SUBAREA 8

LOCATION: DREAM CENTER

PROJECT NO.: _____ STATION: _____

NAME OF STREAM/WATERSHED: SUBAREA 8

DESIGN DATA

DESIGN FREQUENCY:	(2) | 5 | (10) | 25 | 50 | (100)		YEARS
DRAINAGE AREA:	A1	0.5573	ACRES
	A2	—	ACRES
	A3	—	ACRES
	TOTAL (A)	0.5573	ACRES
DRAINAGE LENGTH:		330	FEET
ELEVATION:			
TOP OF DRAINAGE AREA:		—	FEET
AT STRUCTURE		—	FEET
DRAINAGE AREA SLOPE:		5.5	PERCENT
HYDROLOGIC SOIL GROUP:		"TYPE C" FOR UNDISTURBED DESERT	

DESIGN COMPUTATIONS

FREQUENCY FACTOR (F):	(1.00) | 1.00 | (1.00) | 1.10 | 1.20 | (1.25)		
TIME OF CONCENTRATION:	T_c	5	MINUTES
RAINFALL INTENSITY (I):	| 3.7 | | 6.1 | | | 9.2 |		INCHES/HOUR (Figure 2.2-13)
RUNOFF COEFFICIENT (C):	C1	0.48 PRE-DEVELOPED	
	C2	—	
	C3	—	
WEIGHTED RUNOFF COEFFICIENT (C_w):	C_w	0.48	
PEAK DISCHARGE $Q_p = C_wIA(F)$:	| 0.99 | | 1.63 | | | 2.46 |		cfs

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

FIGURE 2.2-18
Hydrologic Design Data Record

APPENDIX C

C.O.S. Section 404 Certification Form
US Army Corps of Engineers 404 Determination Letter

CITY OF SCOTTSDALE SECTION 404 CERTIFICATION FORM

Before the city issues development permits for a project, the developer's Engineer or the property owner must certify that it complies with, or is exempt from, Section 404 of the Clean Water Act of the United States. [Section 404 regulates the discharge of dredged or fill material into a wetland, lake, (including dry lakes), river, stream (including intermittent streams, ephemeral washes, and arroyos), or other waters of the United States.

Prior to submittal of improvement plans to Project Review the form below must be completed (and submitted with the improvement plans) as evidence of compliance.

Certification of Section 404 Permit Status

Owner's Name: _____ Phone No. _____

Project Name/Description: _____ Case No._____

Project Location/Address: _____

_____

A registered Engineer or the property Owner must check the applicable condition and certify by signing below that:

1. **Section 404 does apply to the project because there will be a discharge of dredged or fill material to waters of the U.S., and:**

   ☐ **a: A Section 404 Permit has already been obtained for this project.**

   -or-

   ☐ **b: This project qualifies for a "Nationwide Permit," and this project will meet all terms and conditions of the applicable nationwide permit.**

2. **Section 404 does not apply to the project because:**

   ☐ **a: No watercourses or other waters of the U.S. exist on the property.**

   -or-

   ☐ **b: Watercourses or other waters of the U.S. do exist on the property, but the project will not involve the discharge of dredged or fill material into any of these waters.**

I certify that the above statement is true.

_____ _____ _____

Engineer's Signature and Seal, or Owner's Signature Date

_____ _____ _____

Title Company

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3636 NORTH CENTRAL AVENUE, SUITE 760
PHOENIX, ARIZONA 85012-1936

REPLY TO
Office of the Chief
Regulatory Branch

July 9, 2001

Ms. Jennifer Hogan
SWCA Inc., Environmental Consultants
2120 North Central Avenue, Suite 130
Phoenix, Arizona 85004

File Number: 2001-01033-AP

Dear Ms. Hogan:

Reference is made to your letter of May 3, 2001 in which you requested a Clean Water Act Section 404 jurisdictional delineation for Rawhide Wash and the unnamed washes concerning your client's proposed construction of Scottsdale First Assembly Church located at the intersection of Via Dona and Pima Roads (Section 25, T5N, R4E), Scottsdale, Maricopa County, Arizona.

The enclosed aerial photograph or map delineates the waters of the United States, including wetlands, regulated by Section 404 of the Clean Water Act. This approved jurisdictional determination will remain in effect for five years from the date of this letter unless an unusual flood event occurs. After this five-year period or after an unusual flood event alters stream conditions, the Corps of Engineers reserves the authority to retain the original jurisdictional limits or to establish new jurisdictional limits as conditions warrant.

Each water of the United States herein delineated is an interstate water or a water that is tributary to an interstate water. The Section 404 jurisdictional limit for a water of the United States is defined at 33 CFR Part 328. The jurisdictional limit for a non-tidal water of the United States is determined by the jurisdictional wetland boundary and/or the ordinary high water mark. The jurisdictional limit of a wetland is determined in accordance with the Corps of Engineers 1987 Wetlands Delineation Manual. Otherwise, presence of the indicators stated in the definition of ordinary high mark (33CFR 328.3(e)) are used to establish the jurisdictional limit of a water of the United States. The basis of this jurisdictional determination is shown on the enclosed checklist.

Any discharge of dredged or fill material within the designated jurisdictional area requires a Section 404 permit from the Corps of Engineers. The Corps of Engineers emphasizes avoidance of the delineated jurisdictional area. Please review this delineation and evaluate your proposed activity to ensure that avoidance of the jurisdictional area is given full consideration in your design. If all discharges of dredged or fill material occur outside the designated jurisdictional area, no Section 404 permit is required. If avoidance is not practicable, please reference File Number 2001-01033-AP when submitting your Section 404 permit application to the Corps of Engineers. Please be advised that your application needs to substantiate that avoidance of designated jurisdictional areas is not practicable and substantiate that impacts to waters of the United States have been minimized.

Furthermore, you are hereby advised that the Corps of Engineers has established an Administrative Appeal Process for jurisdictional determinations which is fully described at 33 CFR Part 331. The Administrative Appeal Process for jurisdictional determinations is diagrammed on the enclosed Appendix C. If you decide not to accept this approved jurisdictional determination and wish to provide new information please send the information to this office. If you do not supply additional information you may appeal this approved jurisdictional determination by completing the attached "Notification of Administrative Appeal Options and Process and Request for Appeal" form and submitting it directly to the Appeal Review Officer at the address provided on the form.

The receipt of your letter is appreciated. If you have questions, please contact Ann Palaruan at (602) 640-5385 x 227.

Sincerely,

Cindy Lester

Cindy Lester
Chief, Arizona Section
Regulatory Branch

Enclosure(s)

Copy Furnished:
(Without Enclosures)

Mr. David Friend
Scottsdale First Assembly Church
15650 North 83rd Way, Suite 101
Scottsdale, Arizona 85260

Basis of Jurisdictional Determination

Date of desk determination: July 9, 2001

Supporting documentation:

__X__ Applicant's proposed jurisdictional determination
_____ Wetland delineation following 1987 Corps Wetland Delineation Manual
__X__ Aerial photography interpretation
__X__ Ground photographs/videotape of site
__X__ Topographic map interpretation
_____ Review of historical records and/or aerial photography
_____ Comparison of previously accepted delineations of the area
_____ USGS map(s)
_____ Flow data (drainage reports, modeled flows, USGS gage data, or other sources)
_____ Floodplain maps
_____ Soil Maps
_____ Environmental Assessment/ Environmental Impact Statement
_____ National Wetland Inventory Maps
_____ Staff knowledge of precipitation and fluvial dynamics of the region
__X__ Biological resource reports
Other

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Scottsdale First Assembly Church/ Mr. David Friend	File Number: 2001-01033-AP	Date: July 9, 2001

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I: The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

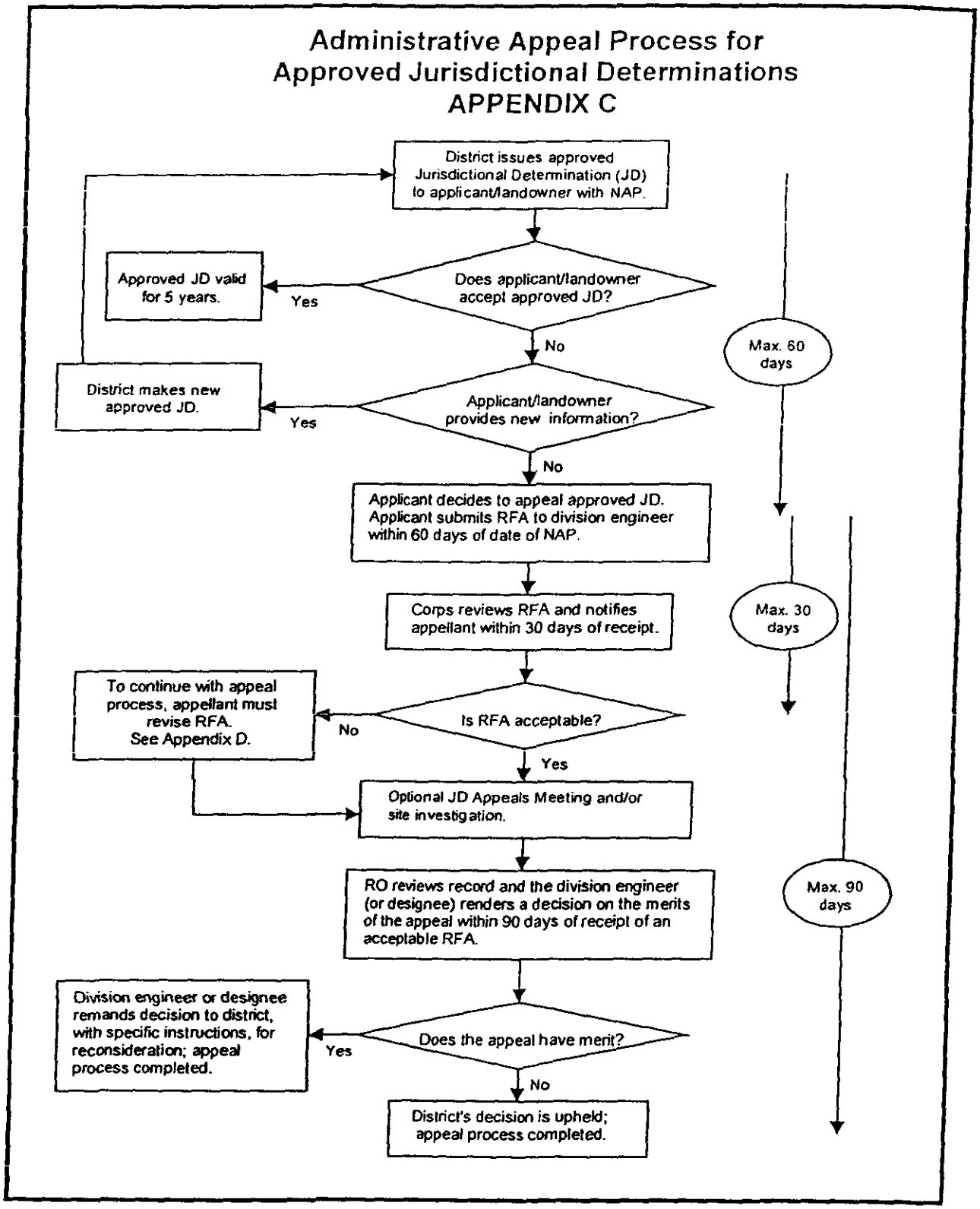
POINT OF CONTACT FOR QUESTIONS OR INFORMATION

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Cindy Lester, Chief, Arizona Section U.S. Army Corps of Engineers, CESPL-CO-RA 3636 North Central Avenue, Suite 760 Phoenix, AZ 85012-1936 Tel. (602) 640-5385x222 FAX (602) 640-2020	Douglas R. Pomeroy, Appeal Review Officer U.S. Army Corps of Engineers, CESPD-ET-CO 333 Market Street San Francisco, CA 94015-2195 Tel. (415) 977-8035 FAX (415) 977-8047

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

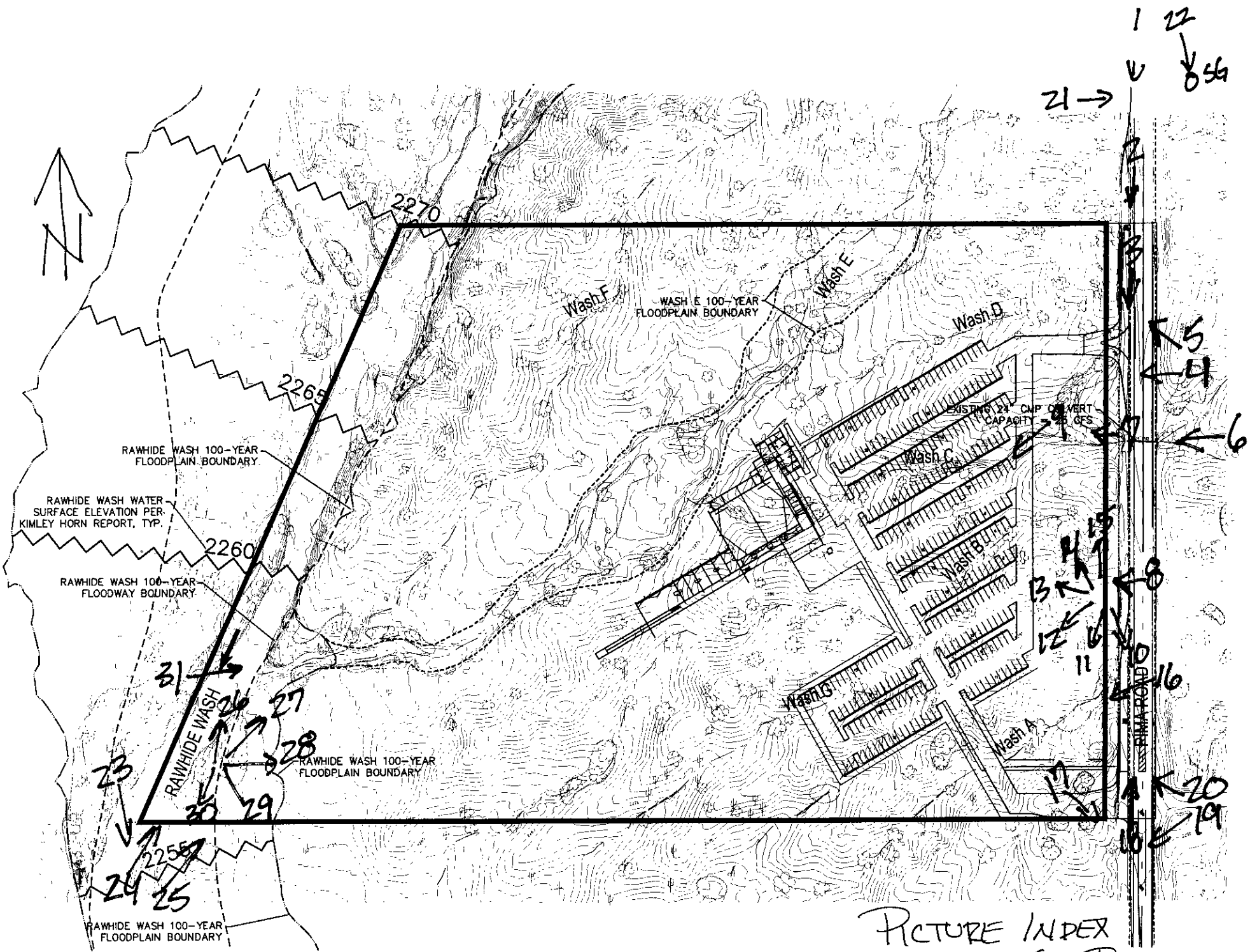
Administrative Appeal Process for Approved Jurisdictional Determinations
APPENDIX C



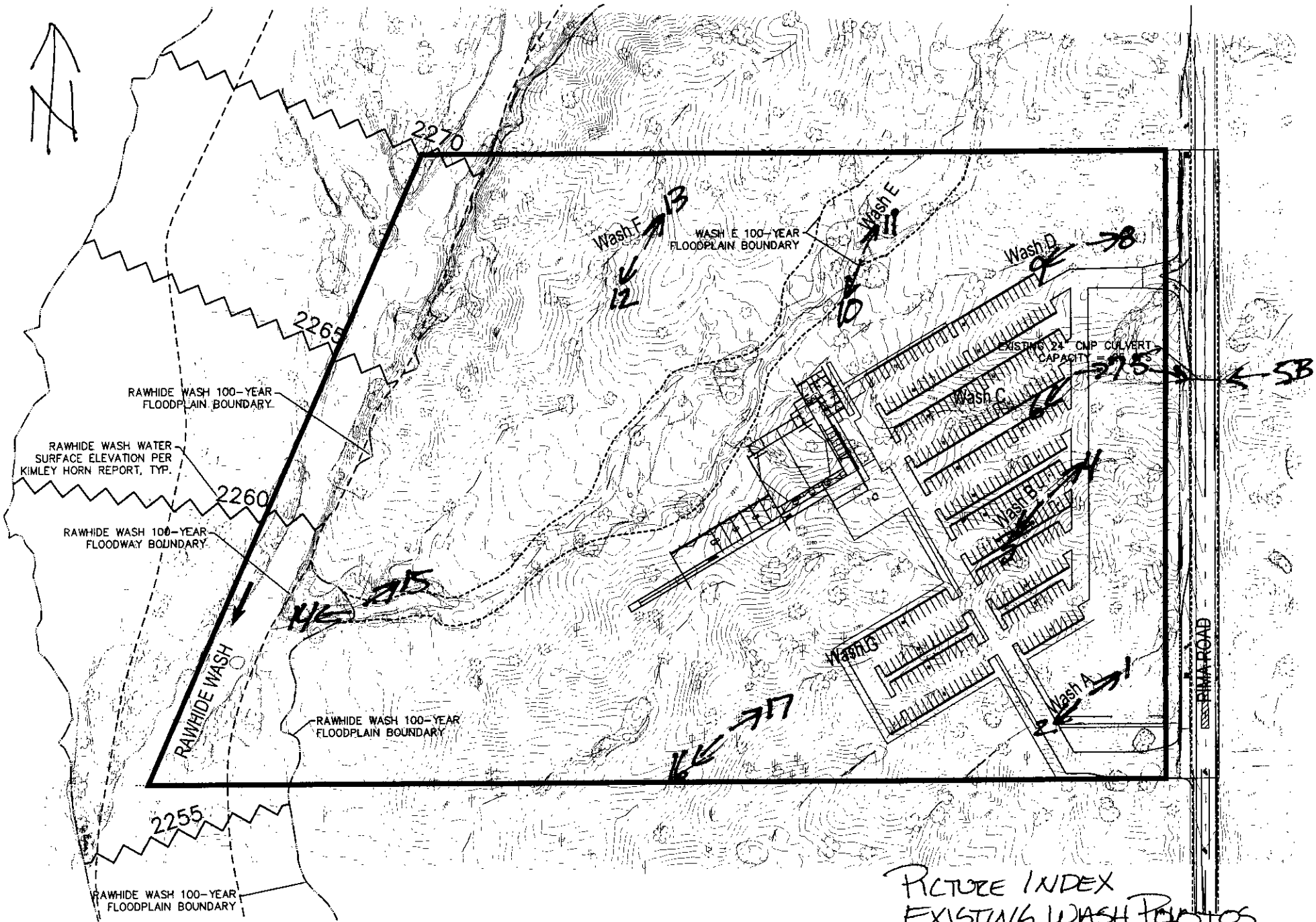
APPENDIX D

Existing Site Photos
Existing Wash Photos

Copied from Preliminary Drainage Report prepared by
Huitt-Zollars, Inc. November 19, 2001



PICTURE INDEX
EXISTING SITE PHOTOS
PICTURES TAKEN 7/12/01



PICTURE INDEX
EXISTING WASH PHOTOS
PICTURES TAKEN 7/16/01

APPENDIX E

Excerpts from "Upper Rawhide Wash – Floodplain Delineation Study"
Prepared by Kimley-Horn and Associates, Inc. dated June 2001

Technical Data Notebook
Section 4 – Hydrologic Analysis

Upper Rawhide Wash

Floodplain Delineation Study

FCD 98-12

Volume 3 of 4

Prepared For:

Flood Control District of Maricopa County
2801 W. Durango
Phoenix, AZ 85009
(602) 506-1501

Prepared By:

Kimley-Horn and Associates, Inc.
Suite 250
7600 N. 15th Street
Phoenix, Arizona 85020
(602) 944-5500

KHA 091131.02
June 2001

4 Hydrology

4.1 METHOD DESCRIPTION

The hydrology for this project was completed using the methodology outlined in the Maricopa County Drainage Design Manual. The U.S. Army Corps of Engineers HEC-1 package was used for the modeling and routing runoff hydrographs. The Drainage Design Menu System (DDMS) developed by the FCDMC was utilized as a preprocessor for HEC-1.

4.2 PARAMETER ESTIMATION

4.2.1 Drainage Area Boundaries

The project consists of approximately twelve (12) river miles of the Upper Rawhide Wash and four (4) of its major tributaries. The watershed is approximately 14 square miles and extends from Hayden and Jomax Roads upstream approximately 6.9 miles to the Tonto National Forest Boundary/City of Scottsdale corporate boundary from Township 5 North, Range 4 East to Township 6 North, Range 5 East (see Figure 4-1).

The watershed is primarily undeveloped open desert with approximately 10 – 15% vegetative cover. There are several areas of rock outcrop, including Granite Mountain and three hills in the Brown Ranch area, the two biggest being locally referred to as "Big Brownie Hill" and "Little Brownie Hill".

The hydrology developed for the Upper Rawhide Wash watershed represents the existing land use and conditions at the time of the study. Existing land use conditions were determined through field observations and from the City of Scottsdale General Plan digital zoning maps and aerial photos. This hydrology model was developed for floodplain/floodway determination for Upper Rawhide Wash and its tributaries for the proposed Rawhide Wash Detention Basin to be located north of Jomax Road, and west of Pima Road. The hydrologic model incorporates a proposed element of the Rawhide Wash Detention Basin Project. This element is a tributary diversion channel that diverts storm water flows from FEMA tributary streams 4A and 4B located east of the basin to the basin site.

4.2.2 Watershed Work Maps

Work maps for the Upper Rawhide study area has been included in Appendix G. The maps provide subbasin boundaries and locate concentration points (Figure G - 1), indicate flow paths

(Figure G - 2), and hydrograph routing paths (Figure G - 3) for the watershed.

Subbasin labels are represented by an alphanumeric numbering convention beginning with the lowest basin numbers in the northern portion of the watershed. The numbering starts with subbasin 005 and continues downstream to basin 070. The basin numbers are incremental and consecutive. In the event that a basin needs to be further subdivided, the numbering remains consecutive. For example, in the first iteration of the model it was determined that basin 010 needed to be subdivided (from 010 to 010 and 012) to better represent the existing hydrologic conditions.

Concentration points are labeled CPxxx or CPxxxy where CP signifies concentration point, *xxx* is the concentration point number and *y* is a designation (A or B). In some cases, hydrographs were combined prior to others for ease of hydraulic modeling. The *y* in the numbering scheme Cp*xxxy* indicates these locations and signifies that there is more than one set of hydrographs at the same point. For example, four hydrographs are ultimately combined at CP022, but they are separated into two groups, CP022A and CP022B before they are combined at CP022.

Routing labels were assigned according to the downstream end of a routing reach. The routing operations are labeled R*xxx-y*, where R stands for Route, *xxx* is the number of the concentration point the flow is being routed to and *y* denotes the number of the hydrograph routed. For example, there are two hydrographs being routed to Concentration Point (CP) CP030 so the KK record designations for these routings are R030-1 and R030-2. Diversion records are labeled D*xxx* where D denotes diversion and *xxx* is the CP immediately upstream of the diversion.

4.2.3 Gage Data

No gage data was used in this study to verify or calibrate the runoff characteristics of the study area basins since none was determined to be available at the time of the study.

4.2.4 Statistical Parameters

The most comprehensive and available source of rainfall data analysis for Maricopa County is the NOAA Precipitation-Frequency Atlas of the Western United States. It has been adopted by the Flood Control District of Maricopa County as the basis for point depth rainfall parameters used for drainage design purposes in Maricopa County. Other sources of long-term data records or statistical parameters for the study watershed were not readily available at the time of the study.

4.2.5 Precipitation

Precipitation in Maricopa County is strongly influenced by variation in climate. Precipitation is typically divided into two seasons of comparative rainfall depth: summer (June through October) and winter (December through March). Warm, moist tropical air can move into Arizona at any time of the year, but most often does so in the summer months, resulting in severe storms and local flooding. Storms of large areal extent are usually associated with frontal or convergence storm activity that may result in long duration rainfall and flooding of major drainage watercourses. These types of storms and flooding usually occur in the winter.

The FCDMC has adopted the 6-hour local storm as defined in the Drainage Design Manual Volume I Hydrology for drainage areas of 0 to 20 square miles. The 24-hour general storm duration using the SCS Type II distribution has also been used for this study. The PREFRE program within the DDMS was utilized along with point rainfall depths obtained from the NOAA Precipitation-Frequency Atlas of the Western United States (NOAA Atlas 2, Volume VIII). A reduction factor is used to convert the point rainfall to an equivalent uniform depth rainfall over the entire watershed. The depth-area reduction curve that is used in Maricopa County is the curve taken from Figure 15 of the NWS HYDRO-40 (Zehr and Myers, 1984). This depth area reduction factor is automatically determined and applied as part of the MCUHP1 program within the DDMS.

The PREFRE model is a part of the DDMS and it calculates precipitation depth-duration-frequency values for the Western United States. It was developed by the National Weather Service and was later revised by the Bureau of Reclamation. For this project, a Primary Zone number of 7 and a Short Duration Zone number of 8 were used for all major basins. The rainfall

depths used in the HEC-1 models are shown in Table 4-1.

Table 4-1: Point Rainfall Values

Storm Duration	100 year depth [in]
6 hour	3.45
24 hour	4.60

4.2.6 Physical Parameters

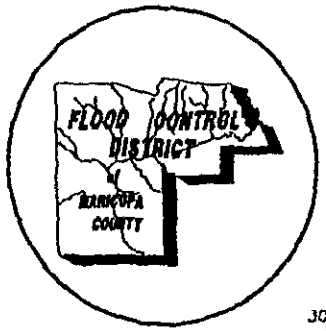
The unit hydrograph for the watershed is determined from the Clark Unit Hydrograph methodology outlined in Section 5.2 of the Drainage Design Manual for Maricopa County, Arizona; Volume I: Hydrology. This methodology is applied through the use of the DDMS program MCUHP1. The application of the Clark Unit Hydrograph requires the estimation of the time of concentration, Tc, for each subbasin. The MCUHP1 program facilitates the calculation of Tc using the Papadakis equation:

$$Tc = 11.4\, L^{0.50} K_b^{0.52} S^{-0.31} I^{-0.38}$$

Tc = time of concentration in hours
L = length of the flow path for Tc in miles
K_b = representative watershed resistance coefficient
S = watercourse slope in feet/mile
i = the average rainfall excess intensity, during the time Tc, in inches/hour

K_b values are assigned within DDMS based on the SCS Aguila-Carefree soil descriptions and the FCDMC land use codes (Figure G - 5). The land use codes have been modified to reflect different levels of vegetative cover. A table of land use characteristics has been included in Appendix D, Section D.2.

The preferred method for calculation of rainfall losses in Maricopa County is the Green and Ampt equation. According to the Drainage Design Manual for Maricopa County, Arizona - Volume I Hydrology, this method should be used for most studies in Maricopa County where the land surface is soil, the infiltration of water is controlled by soil texture, and the bulk density of the soil is affected by vegetation. The Soil Survey of Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, Arizona, April 1986 was used in the determination of soil parameters. A soils map (Figure G - 4) showing the soil classifications in the study area is included in Appendix G. A table showing the combined soil survey information with XKSAT (hydraulic conductivity) is



CONTRACT FCD 98-12

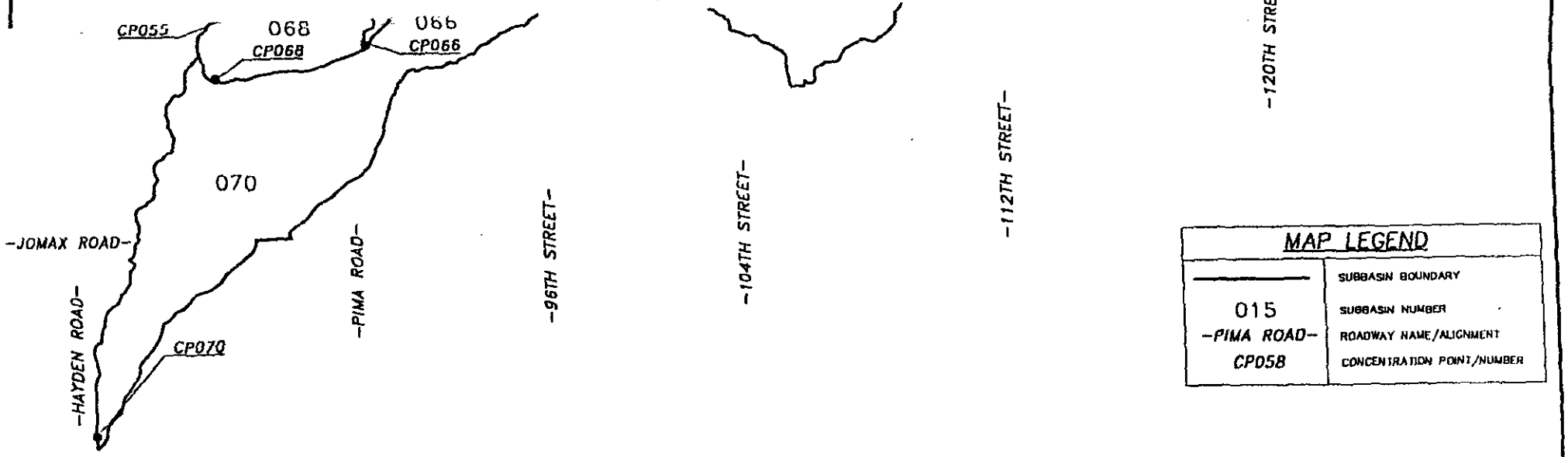
NORTH

GRAPHIC SCALE

3000 0 1500 3000 6000

(IN FEET)

1 inch = 3000ft.



MAP LEGEND	
———	SUBBASIN BOUNDARY
015	SUBBASIN NUMBER
-PIMA ROAD-	ROADWAY NAME/ALIGNMENT
CP058	CONCENTRATION POINT/NUMBER

PROJECT NO. 069153.02
DWG. NAME 31020R41
1
1

UPPER RAWHIDE WASH

FLOODPLAIN DELINEATION STUDY
GENERAL WATERSHED MAP

FIGURE 4-1

SCALE (H): 1"=3000'
SCALE (V): NONE
DRAWN BY: BKB
DESIGNED BY: LSM
CHECKED BY: RAE
DATE: 5/25/99

Kimley-Horn and Associates, Inc.

Engineering, Planning, and Environmental Consultants
7600 North 15th Street, Suite 250
Phoenix, Arizona 85020

Table 4-3: Hydrologic Analysis Results

Location	Basin Area	100 yr, 6 hr				100 yr, 24 hr			
		Peak Discharge	Q_{peak}/ sq. mi	Time to Peak	Runoff Volume	Peak Discharge	Q_{peak}/ sq. mi	Time to Peak	Runoff Volume
	[mi^2]	[cfs]	[cfs/mi^2]	[hr]	[ac-ft]	[cfs]	[cfs/mi^2]	[hr]	[ac-ft]
Basin 005	0.42	289	688	4.53	33	484	1152	12.30	35
Basin 010	0.34	230	676	4.50	25	395	1162	12.30	28
CP010	0.75	518	691	4.53	58	867	1156	12.33	62
Basin 012	0.30	194	647	4.50	21	344	1147	12.30	23
CP012	1.05	697	664	4.63	79	1111	1058	12.43	86
Basin 030	0.35	194	554	4.67	28	297	849	12.43	31
CP030A	1.40	552	394	5.37	81	731	522	13.17	88
Basin 015	1.27	1021	804	4.47	96	1766	1391	12.33	104
Basin 017	0.22	165	750	4.43	17	286	1300	12.27	19
CP022A	1.48	1163	786	4.63	113	1875	1267	12.47	123
Basin 020	0.76	803	1057	4.27	68	1458	1918	12.20	75
Basin 022	0.38	231	608	4.67	34	340	895	12.40	37
CP022B	1.14	996	874	4.50	102	1633	1432	12.40	111
CP022	2.62	2138	816	4.60	215	3445	1315	12.43	234
Basin 024	1.02	1273	1248	4.17	91	2481	2432	12.10	100
Basin 026	0.27	202	748	4.50	28	309	1144	12.27	32
CP026A	1.29	1388	1076	4.40	119	2481	1923	12.27	133
CP026	3.91	3421	875	4.50	334	5412	1384	12.40	367
CP030	5.32	3599	677	4.53	415	5666	1065	12.43	455
Basin 034	0.30	264	880	4.37	28	444	1480	12.27	31
Basin 036	0.25	261	1044	4.27	25	463	1852	12.17	28
CP036	0.55	477	867	4.50	53	648	1178	12.40	59
Basin 038	0.18	178	989	4.27	17	323	1794	12.17	19
CP038A	0.73	638	874	4.47	70	855	1171	12.30	79
Basin 032	0.03	26	867	4.23	2	55	1833	12.13	2
CP038	6.08	4204	691	4.57	487	6445	1060	12.43	536
Basin 040	0.33	282	855	4.30	25	529	1603	12.20	27
CP040	6.41	4373	682	4.67	512	6600	1030	12.50	563

Table 4-3 continued

Location	Basin Area	100 yr, 6				100 yr, 24			
		Peak Discharg	Q_{peak}/ sq. mi	Time to Peak	Runoff Volume	Peak Discharg	Q_{peak}/ sq. mi	Time to Peak	Runoff Volume
	[mi^2]	[cfs]	[cfs/mi^2]	[hr]	[ac-ft]	[cfs]	[cfs/mi^2]	[hr]	[ac-ft]
Basin	0.06	48	800	4.30	4	97	1617	12.17	5
Basin	0.32	306	956	4.27	26	579	1809	12.17	29
CP042	6.79	4581	675	4.70	542	6755	995	12.53	597
Basin	0.29	145	500	4.63	18	253	872	12.37	21
CP043	7.08	4646	656	4.87	561	6720	949	12.70	617
Basin	1.40	1234	881	4.37	108	2207	1576	12.27	119
Basin	0.11	97	882	4.27	8	191	1736	12.17	9
CP046	8.59	5319	619	4.93	677	7150	832	12.80	745
Basin	0.06	53	883	4.20	4	108	1800	12.13	4
Basin	0.16	112	700	4.50	13	192	1200	12.27	14
CP051	8.81	5380	611	5.00	693	7153	812	12.87	763
Basin	0.09	93	1033	4.23	8	175	1944	12.13	8
CP053	8.91	5403	606	5.00	701	7157	803	12.87	771
Basin	0.37	213	576	4.63	29	338	914	12.37	31
CP055	9.27	5564	600	5.03	730	7319	790	12.90	802
Basin	1.76	1483	843	4.47	136	2569	1460	12.33	148
Basin	0.78	500	641	4.63	65	764	979	12.40	70
Basin	0.73	614	841	4.40	61	1056	1447	12.27	67
CP062	1.51	1084	718	4.53	126	1707	1130	12.33	136
Basin	0.47	396	843	4.37	38	694	1477	12.27	41
CP064	3.74	2817	753	4.67	299	4244	1135	12.50	325
Basin	0.01	5	500	4.17	0	10	1000	12.07	0
CP066	3.74	2817	753	4.67	299	4243	1134	12.50	325
Basin	0.25	219	876	4.30	18	421	1684	12.20	20
CP068	13.27	7977	601	5.03	1047	9990	753	12.90	1146
Basin	0.79	462	585	4.60	49	833	1054	12.37	58
CP070	14.06	8079	575	5.23	1096	9940	707	13.07	1202

APPENDIX D Hydrologic Analysis Supporting Documentation

D.1 PRECIPITATION DATA

```
*** O U T P U T   D A T A ***
     REVISED JUNE 1988 TO UPDATE COMPUTATION OF SHORT-DURATION VALUES

    PRECIPITATION FREQUENCY VALUES FOR Upper Rawhide Wash,
     PRIMARY ZONE NUMBER=   7
     SHORT-DURATION ZONE NUMBER=   8


                                   POINT VALUES

                                   RETURN PERIOD
  DURATION     2-YR      5-YR     10-YR     25-YR     50-YR     100-YR    500-YR

    5-MIN       .40       .47       .53       .61       .67       .73       .88   5-MIN
   10-MIN       .59       .71       .80       .93      1.03      1.13      1.35   10-MIN
   15-MIN       .72       .89      1.01      1.18      1.31      1.44      1.75   15-MIN
   30-MIN       .96      1.19      1.35      1.59      1.77      1.96      2.38   30-MIN
     1-HR      1.17      1.47      1.68      1.98      2.21      2.45      2.99     1-HR
     2-HR      1.31      1.66      1.91      2.25      2.52      2.79      3.41     2-HR
     3-HR      1.41      1.79      2.06      2.43      2.73      3.02      3.69     3-HR
     6-HR      1.60      2.04      2.34      2.78      3.11      3.45      4.23     6-HR
    12-HR      1.83      2.35      2.71      3.23      3.63      4.03      4.94    12-HR
    24-HR      2.05      2.66      3.08      3.68      4.14      4.60      5.66    24-HR

  * IF YOUR SITE IS IN ARIZONA OR NEW MEXICO, PLEASE CONSULT THE
    FOLLOWING PAPER FOR REVISED DEPTH-AREA VALUES:
      DEPTH-AREA RATIOS IN THE SEMI-ARID SOUTHWEST UNITED STATES
      NOAA TECHNICAL MEMORANDUM NWS HYDRO-40
      ZEHR AND MYERS
      AUGUST 1984


                INPUT DATA

 PROJECT NAME=Upper Rawhide Wash,
 ZONE= 7     SHORT-DURATION ZONE= 8
 LATITUDE=    .00     LONGITUDE= 100.00     ELEVATION=     0
 2-YR, 6-HR PCPN= 1.60     100-YR, 6-HR PCPN= 3.45
 2-YR, 24-HR PCPN= 2.05     100-YR, 24-HR PCPN= 4.60
```

D.2 PHYSICAL PARAMETER CALCULATIONS

DDMS Input Data								
Basin ID		Basin Area		Top Elev.	Bottom Elev.	Travel Length	Travel Length	Basin Slope
	(sf)	(mi^2)	(acres)	(ft)	(ft)	(ft)	(mi)	(ft/mi)
005	11,629,309	0.417	267	3140	2866	11097	2.10	130
010	9,323,166	0.334	214	3130	2848	10168	1.93	146
012	8,273,168	0.297	190	2970	2774	8859	1.68	117
015	35,357,241	1.268	812	2960	2686	13391	2.54	108
017	5,986,909	0.215	137	2755	2604	7096	1.34	112
020	21,219,770	0.761	487	3020	2673	9186	1.74	199
022	10,589,401	0.380	243	2952	2604	14294	2.71	129
024	28,428,373	1.020	653	3237	2684	8234	1.56	355
026	7,536,216	0.270	173	3250	2604	5861	1.11	582
030	9,921,955	0.356	228	2821	2582	12568	2.38	100
032	900,351	0.032	21	2598	2558	2112	0.40	100
034	8,320,157	0.298	191	2804	2676	6977	1.32	97
036	7,003,459	0.251	161	3054	2570	7238	1.37	353
038	5,095,160	0.183	117	3198	2558	6723	1.27	503
040	9,180,512	0.329	211	2896	2490	8150	1.54	263
041	1,791,128	0.064	41	2544	2452	3656	0.69	133
042	9,048,122	0.325	208	3054	2452	7965	1.51	399
043	7,956,499	0.285	183	2512	2322	10120	1.92	99
044	39,011,591	1.399	896	3054	2306	15811	2.99	250
046	3,102,819	0.111	71	2346	2278	3528	0.67	102
048	1,537,499	0.055	35	2300	2252	2295	0.43	110
051	4,541,717	0.163	104	2432	2252	7420	1.41	128
053	2,608,978	0.094	60	2313	2230	3461	0.66	127
055	10,168,239	0.365	233	2516	2213	12851	2.43	124
058	48,929,471	1.755	1123	2808	2464	15088	2.86	120
060	21,722,678	0.779	499	2846	2330	17922	3.39	152
062	20,323,405	0.729	467	2680	2324	11908	2.26	158
064	13,232,251	0.475	304	2555	2287	9528	1.80	149
066	176,121	0.006	4	2287	2265	934	0.18	124
068	6,915,310	0.248	159	2324	2184	5543	1.05	133
070	22,122,557	0.794	508	2385	2035	14143	2.68	131

Soils Table (by Area)

Basin	Basin	Soil Type - Area in Acres									
ID	Area	6	33	61	63	72	90	93	96	121	122
	(acres)										
005	267		13.8	219.9					33.3		
010	214		97.7	84.6					31.7		
012	190		172.2						17.7		
015	812		260.1	475.2		0.5		9.5	66.3		
017	137	8.7	51.1	19.8		8.0			49.8		
020	487			263.2	94.9	74.8		6.6	47.3	0.3	
022	243		2.7	92.0		43.6		3.7	82.1	18.9	
024	653		6.1	305.1	106.6	96.9		42.6	95.2	0.1	
026	173	0.2	7.5			123.2		0.3	18.8	22.1	
030	228	8.7	88.2	80.4		38.7		1.3	10.4		
032	21	9.0		10.7				1.0			
034	191		13.8	81.5	4.1	78.6		7.8	5.3		
036	161			31.0	10.2	77.3			26.0	16.3	
038	117			63.6		50.3			1.0	2.1	
040	211	27.0	2.4	164.3	11.4	4.7				0.9	
041	41	14.6	1.0	25.5							
042	208	4.7		162.4	37.4	3.2					
043	183	44.9	40.2	67.0							30.6
044	896	48.5	36.4	679.3	71.5	7.8			32.6		19.4
046	71	34.9		8.3					28.1		
048	35	19.7							15.6		
051	104	2.7	38.6	20.8					42.1		
053	60	14.0							45.8		
055	233	0.5	103.3	59.1	17.0				53.5		
058	1123	51.1	1.3	935.6	46.8	1.7			86.8		
060	499			407.0	64.2				27.5		
062	467	10.9		330.9	96.2				28.6		
064	304	47.4	3.1	106.4	25.2				121.7		
066	4	3.0							1.2		
068	159	34.4	23.0					32.5	51.6		17.2
070	508	111.6	28.6	8.4			28.4	17.9	70.2		242.7

Soil Descriptions

FCDMC Soil Number	NRCS Soil Code	XKSAT	Rock Outcropping	Soil Definition
43	6	0.620	0	Anthony-Arizo complex
70	33	0.230	0	Eba very gravelly loam, 1 to 8 percent slopes
98	61	0.150	0	Gran-Wickenburg complex, 1 to 10 percent slopes
100	63	0.140	25	Gran-Wickenburg-Rock outcrop complex, 1 to 7 percent slopes
109	72	0.090	30	Lehmans-Rock outcrop complex, 8 to 65 percent slopes
127	90	0.390	0	Momoli gravelly sandy loam, 1 to 5 percent slopes
130	93	0.330	0	Nickel-Cave complex, 8 to 30 percent slopes
133	96	0.070	0	Pinaleno-Tres Hermanos complex, 1 to 10 percent slopes
158	121	0.120	0	Tres Hermanos-Anthony complex, 1 to 5 percent slopes
159	122	0.330	0	Vado gravelly sandy loam, 1 to 5 percent slopes

EXISTING CONDITIONS LAND USE (by %)				
Basin ID	Basin Area (acres)	Desert10 [1] %	Desert15 [2] %	VLDR [3] %
005	267		100%	0%
010	214		100%	0%
012	190		100%	0%
015	812		100%	0%
017	137		100%	0%
020	487		100%	0%
022	243		100%	0%
024	653		100%	0%
026	173		100%	0%
030	228		100%	0%
032	21		100%	0%
034	191		100%	0%
036	161		100%	0%
038	117		100%	0%
040	211		100%	0%
041	41		100%	0%
042	208		100%	0%
043	183		100%	0%
044	896		100%	0%
046	71		100%	0%
048	35		100%	0%
051	104		100%	0%
053	60		100%	0%
055	233		100%	0%
058	1123		100%	0%
060	499	100%		0%
062	467	100%		0%
064	304	100%		0%
066	4	100%		0%
068	159	100%		0%
070	508	90%		10%

Notes:

All land use categories are based on the Maricopa County Hydrology Manual Table 4.2a and the DDMS.
The desert categories were adjusted to reflect differing values of vegetative cover.

[1] Desert conditions with 10% vegetative cover

[2] Desert conditions with 15% vegetative cover

[3] Very Low Density Residential

D.3 HYDROGRAPH ROUTING DATA

Normal Depth (8 Point Cross Section) Routing Parameters

		From CP005 to CP010	From CP010 to CP012	From CP012 to CP030	From CP015 to CP022	From CP020 to CP022	From CP024 to CP026	From CP026 to CP030	From CP030 to CP038	From CP034 to CP036	From CP036 to CP038	From CP038 to CP040	From CP040 to CP042	From CP042 to CP043	From CP043 to CP046	From CP044 to CP046	From CP046 to CP051	From CP051 to CP053	From CP053 to CP055	From CP055 to CP058	From CP058 to CP064	From CP060 to CP062	From CP062 to CP064	From CP064 to CP066	From CP066 to CP068	From CP068 to CP070
		R010-1	R012-1	R030-1	R022-1	R022-2	R026-1	R030-2	R038-1	R036-1	R038-2	R040-1	R042-1	R043-1	R046-1	R046-2	R051-1	R053-1	R055-1	R068-1	R064-1	R062-1	R064-2	R066-1	R068-2	R070-1
RC Record	LOB n-value	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
	Channel n-value	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	ROB n-value	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
	Reach length [ft]	884	3716	10780	4466	4146	4976	1354	1605	5295	424	3775	2074	7504	2845	1882	1557	1681	784	1728	7694	441	1554	934	3234	7672
	High elev	2866	2848	2774	2686	2673	2684	2604	2582	2676	2570	2558	2490	2452	2322	2306	2278	2252	2230	2213	2464	2330	2324	2287	2265	2184
	Low elev	2848	2774	2582	2604	2604	2604	2582	2558	2570	2558	2490	2452	2322	2278	2278	2252	2230	2213	2184	2287	2324	2287	2265	2184	2035
	Slope [ft/ft]	0.020	0.020	0.018	0.018	0.017	0.016	0.016	0.015	0.020	0.028	0.018	0.018	0.017	0.015	0.015	0.017	0.013	0.022	0.017	0.023	0.014	0.024	0.024	0.025	0.019
RX Record	LOB Sta	0	261	428	9714	9805	9712	214	290	9725	9837	47	263	263	9425	9425	9822	9910	111	111	0	0	0	0	198	65
	LOB Sta	40	486	497	9798	9902	9782	314	378	9842	9891	75	349	349	9601	9601	9952	9935	154	154	76	20	17	31	224	146
	Left Bank Sta	156	555	753	9905	10081	9851	479	536	9891	9971	224	381	381	9923	9923	9976	9963	304	304	102	38	23	66	270	307
	Channel Sta	172	684	780	9943	10090	9931	518	538	9970	9988	433	450	450	9945	9945	9977	9987	389	389	111	41	73	104	283	320
	Channel Sta	201	700	835	10002	10098	9950	654	607	10030	10012	448	522	522	10019	10019	10023	10041	510	510	117	45	83	111	684	550
	Right Bank Sta	253	716	868	10037	10102	10050	771	650	10032	10126	523	756	756	10043	10043	10046	10046	725	725	118	60	90	121	688	565
	ROB Sta	546	743	897	10299	10253	10176	852	727	10143	10148	609	847	847	10267	10267	10356	10075	836	836	168	94	99	129	721	810
	ROB Sta	571	776	992	10412	10264	10237	939	753	10241	10177	678	973	973	10435	10435	10509	10085	937	937	205	128	107	149	769	964
RY Record	LOB Elev	2870	2794	2684	2740	2690	2700	2604	2582	2652	2578	2540	2486	2486	2300	2300	2275	2249	2208	2208	2323	2328	2316	2281	2228	2130
	LOB Elev	2868	2792	2680	2734	2688	2692	2598	2576	2646	2574	2536	2482	2482	2288	2288	2261	2245	2202	2202	2321	2328	2316	2281	2227	2127
	Left Bank Elev	2868	2792	2680	2734	2688	2688	2598	2574	2646	2574	2530	2476	2476	2288	2288	2262	2245	2200	2200	2319	2327	2315	2280	2227	2127
	Channel Elev	2866	2790	2682	2728	2686	2688	2596	2572	2642	2572	2530	2482	2482	2286	2286	2260	2238	2197	2197	2319	2327	2315	2280	2226.5	2125.5
	Channel Elev	2866	2788	2682	2726	2686	2688	2596	2572	2642	2572	2528	2476	2476	2286	2286	2260	2238	2199	2199	2320	2326	2316	2281	2226.5	2125.5
	Right Bank Elev	2868	2790	2680	2728	2688	2686	2594	2580	2644	2574	2528	2476	2476	2288	2288	2263	2239	2200	2200	2321	2326	2317	2282	2227	2124
	ROB Elev	2868	2792	2680	2730	2688	2696	2594	2580	2644	2576	2534	2482	2482	2288	2288	2264	2239	2199	2199	2323	2327	2318	2283	2227	2124
	ROB Elev	2870	2794	2684	2740	2690	2700	2604	2582	2652	2578	2540	2486	2486	2302	2302	2275	2242	2208	2208	2325	2327	2319	2284	2228	2130

D.4 ROUTING PARAMETER – NSTPS

Existing Conditions NSTPS Values For RK Records

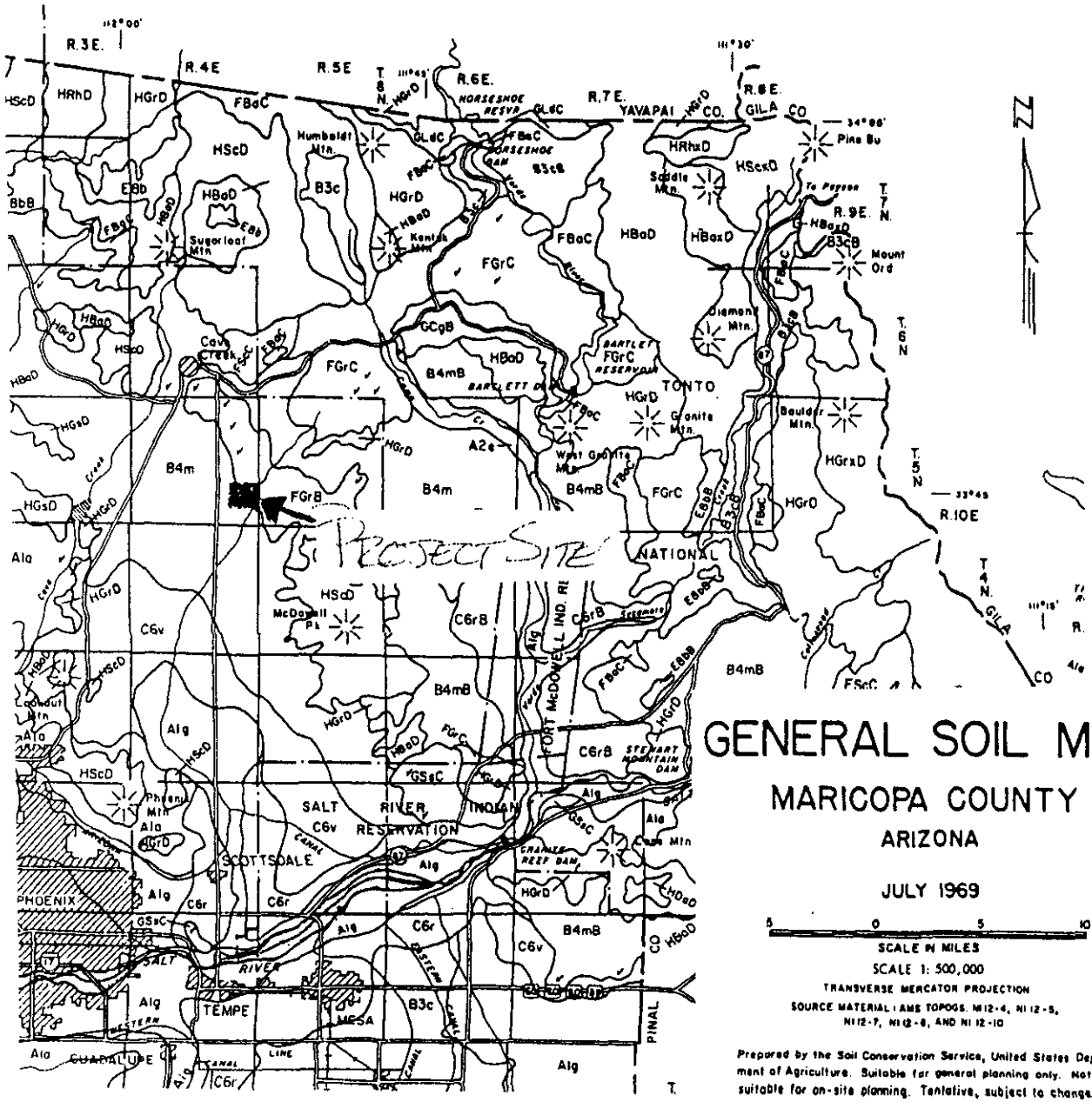
6-hour *NMIN 2 min*

	From CP005 to CP010	From CP010 to CP012	From CP012 to CP030	From CP015 to CP022	From CP020 to CP022	From CP024 to CP026	From CP026 to CP030	From CP030 to CP038	From CP034 to CP036	From CP036 to CP038	From CP038 to CP040	From CP040 to CP042	From CP042 to CP043	From CP043 to CP046	From CP044 to CP046	From CP046 to CP051	From CP051 to CP053	From CP053 to CP055	From CP055 to CP058	From CP058 to CP064	From CP060 to CP062	From CP062 to CP064	From CP064 to CP066	From CP066 to CP068	From CP068 to CP070
	R010-1	R012-1	R030-1	R022-1	R022-2	R026-1	R030-2	R038-1	R036-1	R038-2	R040-1	R042-1	R043-1	R046-1	R046-2	R051-1	R053-1	R055-1	R068-1	R064-1	R062-1	R064-2	R066-1	R068-2	R070-1
Reach length [ft]	884	3716	10780	4466	4146	4976	1354	1605	5295	424	3775	2074	7504	2845	1882	1557	1681	784	1728	7694	441	1554	934	3234	7672
Velocity [ft/s]	5.60	5.48	3.08	5.68	4.83	6.57	6.68	7.26	4.69	5.69	7.62	8.07	8.17	5.37	3.48	7.52	15.60	6.86	6.86	7.89	5.30	8.41	10.28	6.08	8.28
NSTPS	1	6	29	7	7	8	2	2	9	1	4	2	8	4	5	2	1	1	2	8	1	2	1	4	8
Qpre	292	518	431	1003	766	1167	3345	3505	264	475	4080	4256	4391	4421	1229	5296	5374	5393	5532	1480	500	1083	2791	2755	7845
Qnstps	289	514	430	1011	776	1189	3409	3573	260	477	4166	4353	4516	4607	1222	5296	5374	5393	5532	1446	500	1083	2815	2801	7845
Diff[1]	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

24-hour *NMIN 2 min*

	From CP005 to CP010	From CP010 to CP012	From CP012 to CP030	From CP015 to CP022	From CP020 to CP022	From CP024 to CP026	From CP026 to CP030	From CP030 to CP038	From CP034 to CP036	From CP036 to CP038	From CP038 to CP040	From CP040 to CP042	From CP042 to CP043	From CP043 to CP046	From CP044 to CP046	From CP046 to CP051	From CP051 to CP053	From CP053 to CP055	From CP055 to CP058	From CP058 to CP064	From CP060 to CP062	From CP062 to CP064	From CP064 to CP066	From CP066 to CP068	From CP068 to CP070
	R010-1	R012-1	R030-1	R022-1	R022-2	R026-1	R030-2	R038-1	R036-1	R038-2	R040-1	R042-1	R043-1	R046-1	R046-2	R051-1	R053-1	R055-1	R068-1	R064-1	R062-1	R064-2	R066-1	R068-2	R070-1
Reach length [ft]	884	3716	10780	4466	4146	4976	1354	1605	5295	424	3775	2074	7504	2845	1882	1557	1681	784	1728	7694	441	1554	934	3234	7672
Velocity [ft/s]	6.45	6.01	3.48	6.18	5.48	6.67	7.90	8.54	5.51	6.15	8.87	9.25	9.25	6.16	4.32	7.34	15.33	7.59	7.65	9.12	6.01	9.89	11.78	6.99	8.97
NSTPS	1	5	26	6	6	6	1	2	8	1	4	2	7	4	4	2	1	1	2	7	1	1	1	4	7
Qpre	482	860	595	1748	1293	2173	5286	5541	415	632	6270	6557	6555	6583	2096	7079	7142	7136	7280	2296	763	1696	4162	4164	9712
Qnstps	484	832	599	1674	1293	2173	5366	5638	415	647	6379	6557	6555	6583	2118	7079	7142	7136	7280	2367	761	1694	4241	4181	9712
Diff[1]	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

[1] Tolerance = 5%



GENERAL SOIL MAP

MARICOPA COUNTY

ARIZONA

JULY 1969

5 0 5 10

SCALE IN MILES

SCALE 1: 500,000

TRANSVERSE MERCATOR PROJECTION

SOURCE MATERIAL: AMS TOPOGS. NI12-4, NI12-5, NI12-7, NI12-8, AND NI12-10

Prepared by the Soil Conservation Service, United States Department of Agriculture. Suitable for general planning only. Not suitable for on-site planning. Tentative, subject to change.

LEGEND

A

Typic Torrifluvents

- A1a — Deep sandy loam soils.
- A1g — Deep loamy soils.
- A7s — Gravelly sandy loam and loamy sand soils.
- A5g — Deep loamy soils -- hyperthermic*.

B

Typic Haplargids

- B3c — Soils with limy and clayey subsoils.
- B3cB — Soils with limy and clayey subsoils. 5-15% slopes.
- B4h — Soils with saline and limy gravelly clay loam subsoils.
- B4hB — Soils with saline and limy, gravelly clay loam subsoils. 5-15% slopes
- B4h-r — Complex of Soils with saline and limy gravelly clay loam subsoils (B4h) and Limy gravelly soils (C6r).
- B4m — Soils with limy clay loam subsoils.
- B4mB — Soils with limy clay loam subsoils. 5-15% slopes.

C

Typic Calciorthids

- C6r — Limy gravelly soils.
- C6rB — Limy gravelly soils. 5-15% slopes.
- C6r-h — Complex of limy gravelly soils (C6r) and Soils with saline and limy gravelly clay loam subsoils (B4h).
- C6r-hB — Complex of Limy gravelly soils (C6r) and Soils with saline and limy gravelly clay loam subsoils (B4h). 5-15% slopes.
- C6v — Limy loamy soils.
- C6v — Limy sandy loam soils.
- C7r — Limy gravelly soils -- hyperthermic.
- C7v — Limy loamy soils -- hyperthermic.

D

Typic Natrargids

- D4d — Soils with limy and alkali clay loam subsoils.

E

Lithic Torriorthents

- E8b — Stony soils on basalt.
- E8bB — Stony soils on basalt. 5-15% slopes.
- E9bB — Stony soils on basalt -- hyperthermic. 5-15% slopes.

F

Shallow Soils Over Unweathered and/or Weathered Bedrock

- FAdC — Shallow soils over andesite. 15-30% slopes.
- FBaC — Shallow soils over basalt. 15-30% slopes.
- FGnC — Shallow soils over granite gneiss. 15-30% slopes.
- FGrB — Shallow soils over granite. 5-15% slopes.
- FGrC — Shallow soils over granite. 15-30% slopes
- FScB — Shallow soils over schist. 5-15% slopes.
- FScC — Shallow soils over schist. 15-30% slopes

G

Shallow and Moderately Deep Soils Over Geologic Materials

- GCgB — Shallow and moderately deep soils over sand or gravel. 5-15% slopes.
- GCgC — Shallow and moderately deep soils over sand and gravel. 15-30% slopes
- GLdB — Shallow and moderately deep soils over lake deposits. 5-15% slopes.
- GLdC — Shallow and moderately deep soils over lake deposits. 15-30% slopes
- GSaC — Shallow and moderately deep soils over sandstone and shale. 15-30% slopes.
- GVmC — Shallow and moderately deep soils over mixed volcanics. 15-30% slopes

H

Stony and Rocky Mountainous Land

- HAdD — Stony and rocky mountainous land on andesite. Over 30% slopes.
- HBaD — Stony and rocky mountainous land on basalt. Over 30% slopes.
- HBmD — Stony and rocky mountainous land -- mesic on basalt. Over 30% slopes
- HDaD — Stony and rocky mountainous land on dacite. Over 30% slopes.
- HDmD — Stony and rocky mountainous land -- mesic, on dacite. Over 30% slopes
- HGnD — Stony and rocky mountainous land on granite gneiss. Over 30% slopes
- HGrD — Stony and rocky mountainous land on granite. Over 30% slopes.
- HGrmD — Stony and rocky mountainous land -- mesic, on granite. Over 30% slopes
- HGsD — Stony and rocky mountainous land on greenstone. Over 30% slopes.
- HLsD — Stony and rocky mountainous land on limestone. Over 30% slopes.
- HRhD — Stony and rocky mountainous land on rhyolite. Over 30% slopes.
- HRhmD — Stony and rocky mountainous land -- mesic, on rhyolite. Over 30% slopes
- HScD — Stony and rocky mountainous land on schist. Over 30% slopes.
- HScmD — Stony and rocky mountainous land -- mesic on schist. Over 30% slopes
- HSqD — Stony and rocky mountainous land on shale. Over 30% slopes.
- HVmD — Stony and rocky mountainous land on mixed Volcanics. Over 30% slopes.

Xa

Mixed Alluvial Soils Subject to Flooding

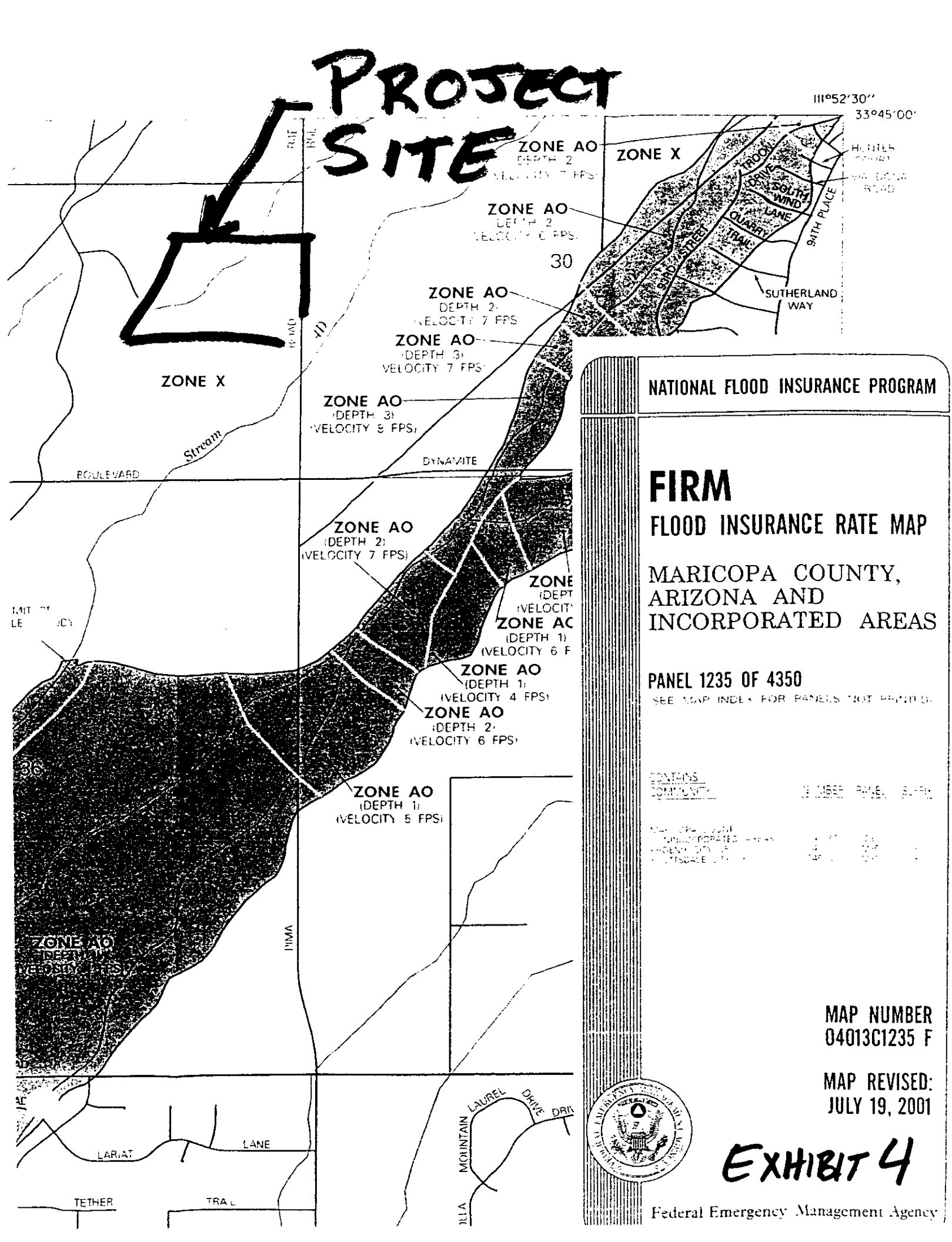
- Xa — Alluvial soils subject to flooding.

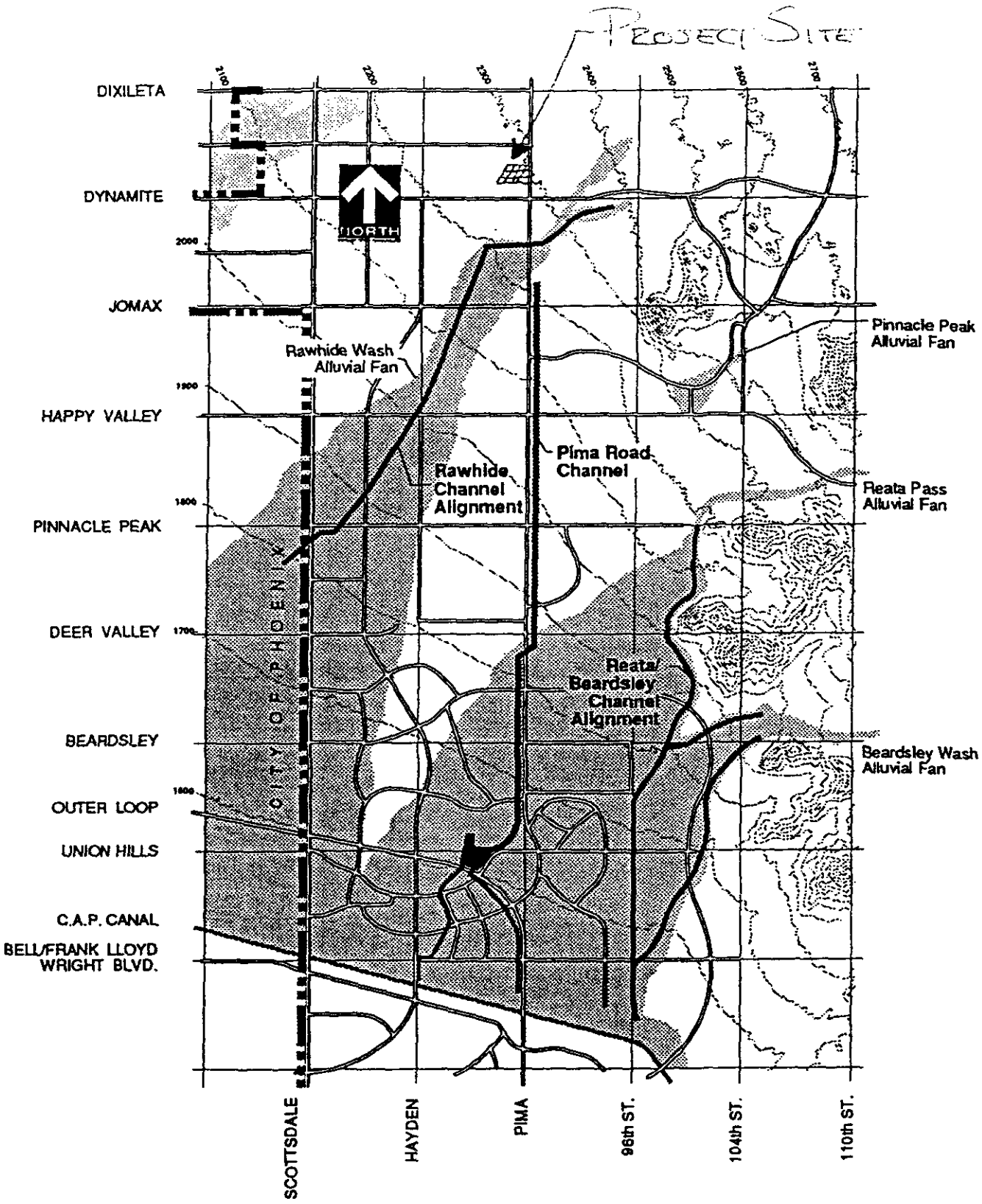
✓ — Areas of rock outcrop too small to delineate.

*All units are in the thermic temperature zone unless indicated otherwise.

SWT 6-69 Rev. MSJ

EXHIBIT 3


PROJECT SITE
111°52'30"
33°45'00"
ZONE AO
DEPTH 2
ZONE X
TROON DRIVE
SOLTRY WIND LANE
QUARRY TRAIL
94TH PLACE
93RD STREET
SUTHERLAND WAY
ZONE AO
DEPTH 2
30
ZONE AO
(DEPTH 2)
VELOCITY 7 FPS
ZONE AO
(DEPTH 3)
VELOCITY 7 FPS
ZONE X
ZONE AO
(DEPTH 3)
VELOCITY 8 FPS
Stream
DYNAMITE
BOULEVARD
ZONE AO
(DEPTH 2)
(VELOCITY 7 FPS)
ZONE AO
(DEPTH 1)
(VELOCITY 6 F
ZONE AO
(DEPTH 1)
(VELOCITY 4 FPS)
ZONE AO
(DEPTH 2)
(VELOCITY 6 FPS)
36
ZONE AO
(DEPTH 1)
(VELOCITY 5 FPS)
PIMA
ZONE AO
(DEPTH 1)
(VELOCITY 4 FPS)
LARIAT
LANE
TETHER
MOUNTAIN LAUREL DRIVE
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS
PANEL 1235 OF 4350
SEE MAP INDEX FOR PANELS NOT PRINTED
MAP NUMBER
04013C1235 F
MAP REVISED:
JULY 19, 2001
EXHIBIT 4
Federal Emergency Management Agency



Legend

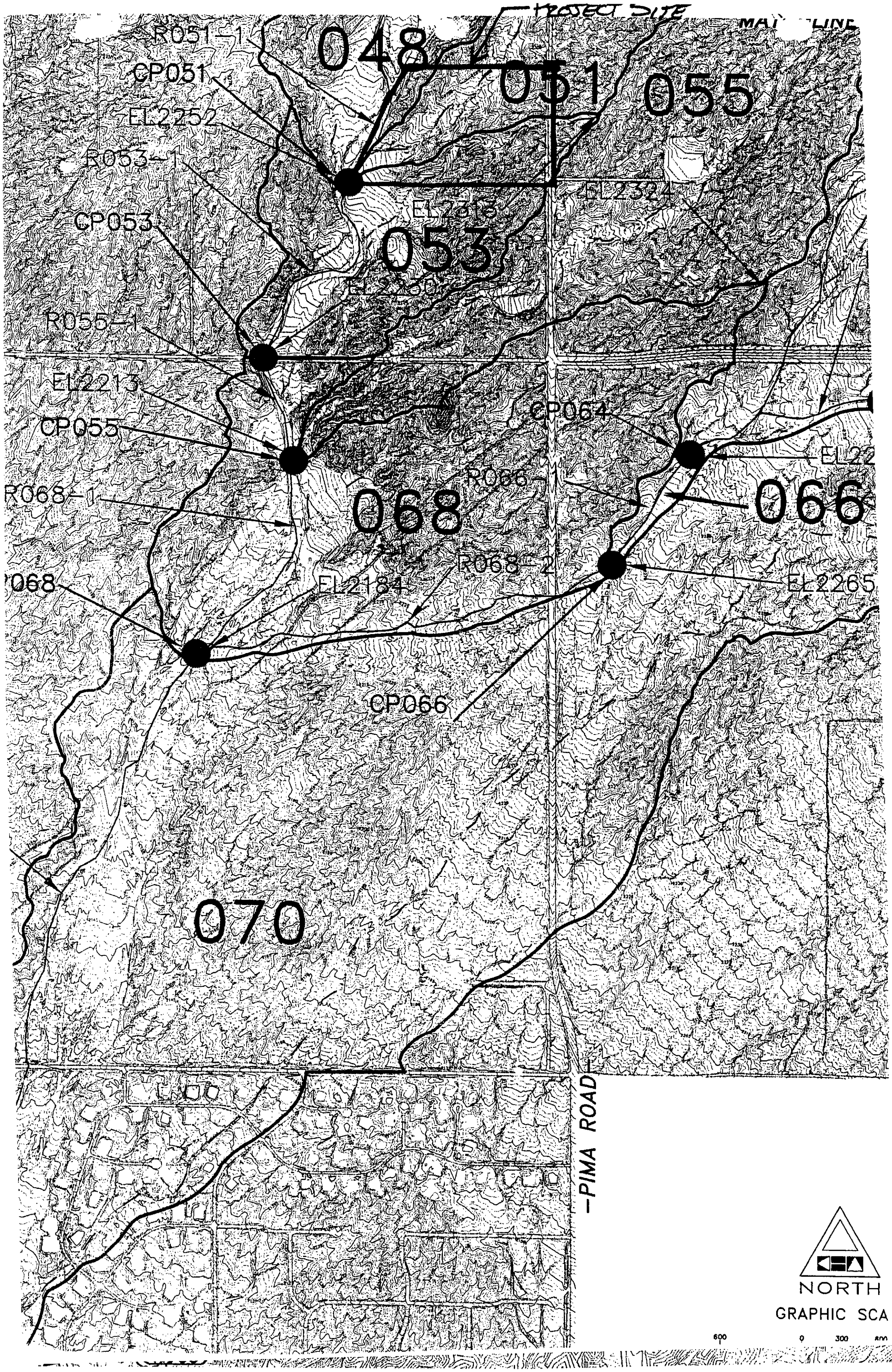
Flood Zones

TAKEN FROM REATA PASS/BEARDSLEY WASH ALIGNMENT STUDY, NOV. 1992

EXHIBIT 6

Recommended Conceptual Regional Stormwater Management Plan

Note: The purpose of these figures is completely illustrative only. For more detailed information, consult the Upper Indian Bend Wash Regional Drainage & Flood Control Plan, July 1992.


PROJECT SITE
R051-1
CP051
EL2252
R053-1
CP053
EL2213
CP055
R056-1
R068-1
068
R068-2
EL2184
CP066
R066-1
066
EL2265
EL2324
EL2315
053
055
070
PIMA ROAD
NORTH
GRAPHIC SCA
600
0
300

DRAINAGE AREAS ON-SITE	ACRES	OFF-SITE*	ACRES
1A	1.6936	1B	0.9159
2A	4.0200	2B	1.4428
3A	2.1675	3B	3.4975
4A	2.1672	4B	1.2759
5A	104.2635	**SEE WASH E COMMENTS	
6A	2.5782	6B	0.7574
7A	1.1597		
8A	0.5573		

* OFF-SITE DRAINAGE AREAS ARE FROM THE KIMLEY HORN REPORT.

**WASH E - PEAK DISCHARGES WERE TAKEN FROM THE KIMLEY-HORN REPORT TITLED "UPPER RAWHIDE WASH - FLOODPLAIN DELINEATION STUDY," DATED JUNE 2001. DISCHARGES FOR SUBAREA 051 OF STUDY.

WASH E IS THE ONLY EXISTING WASH THAT HAS A BANKFULL FLOW CAPACITY OF 50 CFS OR GREATER. PER C.O.S. STANDARDS, 100-YEAR FLOODPLAIN BOUNDARY MUST BE DETERMINED AND DRAINAGE EASEMENT PROVIDED. WASH E AND RAWHIDE WASH ARE THE ONLY WASHES DELINEATED BY USACOE AS WATERS OF THE U.S.

Q_2= 1 CFS
Q_{10}= 2 CFS
Q_{100}= 3 CFS

Q_2= 16 CFS
Q_{10}= 57 CFS
Q_{100}= 112 CFS

Q_2= 2 CFS
Q_{10}= 4 CFS
Q_{100}= 6 CFS

Q_2= 6 CFS
Q_{10}= 10 CFS
Q_{100}= 15 CFS

Q_2= 6 CFS
Q_{10}= 10 CFS
Q_{100}= 15 CFS

Q_2= 10 CFS
Q_{10}= 17 CFS
Q_{100}= 25 CFS

Q_2= 3 CFS
Q_{10}= 4 CFS
Q_{100}= 6 CFS

Q_2= 2 CFS
Q_{10}= 3 CFS
Q_{100}= 4 CFS

Q_2= 16 CFS
Q_{10}= 57 CFS
Q_{100}= 112 CFS

Q_2= 4 CFS
Q_{10}= 12 CFS
Q_{100}= 24 CFS

Q_2= 2 CFS
Q_{10}= 3 CFS
Q_{100}= 5 CFS

Q_2= 1 CFS
Q_{10}= 2 CFS
Q_{100}= 3 CFS

Q_2= 5 CFS
Q_{10}= 8 CFS
Q_{100}= 12 CFS

RAWHIDE WASH 100-YEAR FLOODPLAIN BOUNDARY DRAINAGE & TRAIL EASEMENT

RAWHIDE WASH WATER SURFACE ELEVATION PER KIMLEY HORN REPORT, TYP.

RAWHIDE WASH 100-YEAR FLOODWAY BOUNDARY

RAWHIDE WASH

WASH E 100-YEAR FLOODPLAIN BOUNDARY AND DRAINAGE EASEMENT

EXISTING 24" CMP CULVERT CAPACITY = 25 CFS

USE HEC-1 MODEL ON WASH B ONLY PER CITY STAFF

PIMA ROAD

Wash A, Wash B, Wash C, Wash D, Wash E, Wash F, Wash G, Wash 8A

6B, 5B, 4B, 6A, 5A, 4A, 3A, 3B, 2B, 2A, 1B, 1A, 7A, 8A

0+00, 1+00, 2+00, 3+00, 4+00, 5+00, 6+00, 7+00, 8+00, 9+00, 10+00, 11+00, 12+00, 13+00, 14+00, 15+00, 16+

2270, 2265, 2260, 2255

5843 SCOTTSDALE HRS

REVISIONS

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MESA, ARIZONA 85206
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FAX (480) 830-4888

HEC Engineering, L.L.C.
Civil Engineering • Land Planning • Surveying

EXISTING DRAINAGE MAP

PROJECT: DREAM CENTER
SOUTH OF THE SWC OF PIMA RD & VIA DONA RD
SCOTTSDALE, ARIZONA

602-263-1100
1-800-STAKE-IT

PRELIMINARY
NOT FOR CONSTRUCTION OR RECORDING

JOB NO. 5843
FILE NO. 5843DE01

EXHIBIT 1

SHEET NO. EXBT 1

60 0 60 180
Scale Feet

NOTES:
SEE RUNOFF AND RETENTION CALCULATIONS SPREADSHEET IN APPENDIX A.

EQUATION USED TO DETERMINE REQUIRED RETENTION:

$$V=\left(\frac{P_{100}}{12}\right)AC$$

- ☐ = AREA 1A
- ☐ = AREA 2A
- ☐ = AREA 3A
- ☐ = AREA 4A
- ☐ = AREA 5A
- ☐ = AREA 6A
- ☐ = AREA 7A
- ☐ = AREA 8A

Scale: 50 0 50 100 Feet

RAWHIDE WASH

RAWHIDE WASH 100-YEAR FLOODPLAIN BOUNDARY/ DRAINAGE & TRAIL EASEMENT

WASH E 100-YEAR FLOODPLAIN BOUNDARY AND DRAINAGE EASEMENT

Wash F (6A)

Wash E

Wash D (4A)

Wash C

Wash B

Wash G (7A)

Wash 8A (8A)

Wash A

PIMA ROAD

BASIN 1 V=0.08 ACRE-FT

BASIN 2

BASIN 3 V=0.21 ACRE-FT

USE HEC-1 MODEL ON WASH B ONLY PER CITY STAFF

68: Q_2= 1 CFS, Q_{10}= 2 CFS, Q_{100}= 3 CFS

5B: Q_2= 16 CFS, Q_{10}= 57 CFS, Q_{100}= 112 CFS

5A: Q_2= 4 CFS, Q_{10}= 8 CFS, Q_{100}= 12 CFS

4B: Q_2= 2 CFS, Q_{10}= 4 CFS, Q_{100}= 6 CFS

3B: Q_2= 6 CFS, Q_{10}= 10 CFS, Q_{100}= 15 CFS

3A: Q_2= 14 CFS, Q_{10}= 23 CFS, Q_{100}= 34 CFS

2B: Q_2= 3 CFS, Q_{10}= 4 CFS, Q_{100}= 6 CFS

2A: Q_2= 2 CFS, Q_{10}= 3 CFS, Q_{100}= 4 CFS

1B: Q_2= 2 CFS, Q_{10}= 3 CFS, Q_{100}= 4 CFS

6A: Q_2= 6 CFS, Q_{10}= 10 CFS, Q_{100}= 15 CFS

6A: Q_2= 16 CFS, Q_{10}= 57 CFS, Q_{100}= 112 CFS

7A: Q_2= 7 CFS, Q_{10}= 11 CFS, Q_{100}= 17 CFS

8A: Q_2= 2 CFS, Q_{10}= 3 CFS, Q_{100}= 5 CFS

1A: Q_2= 1 CFS, Q_{10}= 2 CFS, Q_{100}= 3 CFS

1A: Q_2= 5 CFS, Q_{10}= 8 CFS, Q_{100}= 13 CFS

24" (SD)

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Civil Development • Land Planning • Surveying
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MESA, ARIZONA 85206
PHONE (480) 218-8831
FAX (480) 830-4888

PROPOSED DRAINAGE MAP

PROJECT: DREAM CENTER
SOUTH OF THE SWC OF PIMA RD & VIA DONA RD
SCOTTSDALE, ARIZONA

Call Before You Dig 602-263-1100 1-800-STAKE-IT (for hearing impaired)

PRELIMINARY
NOT FOR CONSTRUCTION OR RECORDING

JOB NO. 5843
FILE NO. 5843DE02

EXHIBIT 2

SHEET NO. **EXBT 2**