

CAVASSON

LOCATED NEAR THE SOUTHWEST CORNER OF NORTH HAYDEN ROAD AND EAST
LEGACY BOULEVARD

PRELIMINARY DRAINAGE REPORT- GRAYHAWK RESIDENCES AT CAVASSON Basis of Design

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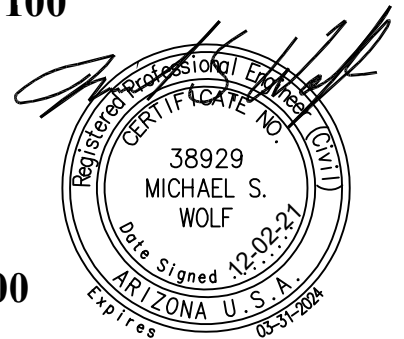
Project No.: 18114-601

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APPENDICES

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Appendix C	Cavasson HEC-1 Data
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EXHIBITS

Exhibit 1	Offsite HEC-1 Basins
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1. INTRODUCTION

1.1 Project Scope

This report presents the results of a *Final Drainage Study* conducted by Hubbard Engineering at the request of GDI ML Cavasson (“client”), for The Grayhawk Residences at Cavasson development (“site”). The purpose of this report is to provide a hydrologic evaluation for the site as required by the City of Scottsdale per Ordinances 4346 and 4347. This report addresses off-site and on-site conditions. Drainage calculations and methodologies conform to the City of Scottsdale requirements and standards and to Hubbard Engineering’s submitted *Master Drainage Report* for the Cavasson development.

This report is focused on providing practical design information, evaluation, and calculations for statistical flood events up to and including the 100-year frequency flood. The procedures used herein are derived from and performed with currently accepted engineering methodologies and practices. Additionally, the criteria for this evaluation are designed to conform to currently applicable ordinances, regulations and policies affected by the appropriate jurisdictional regulatory authorities for the site.

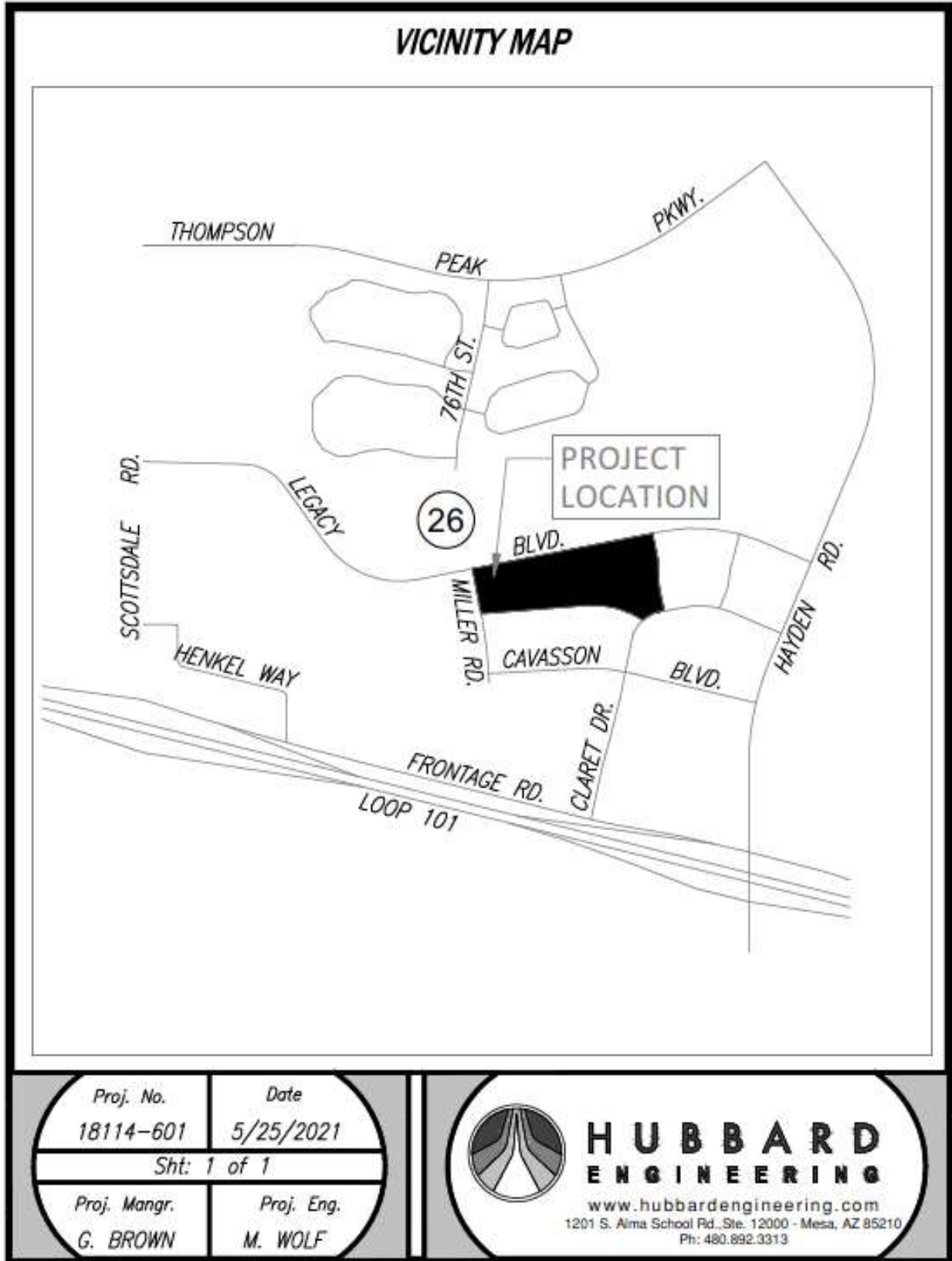
The analysis presented herein focuses on developing design estimates of storm water runoff resulting from a statistical evaluation of storm events of a particular duration and frequency, up to and including a 100-year frequency event. A storm event exceeding the 100-year frequency event may cause or create the risk of greater flood impact than is addressed and presented herein. The scope of this assessment does not include evaluation of storm water runoff resulting from storm events exceeding the 100-year frequency event. Hubbard assumes no responsibility for actual flood damage, increased risks of flood damage, or increased construction or development costs resulting from or related to any such events. Nor shall Hubbard be responsible for any changes in, or additions to, regulatory requirements which may result from, or be related to, any such events or changes in hydrologic or hydraulic conditions within the watershed.

1.2 Site Description

The project site is located in the southeast quarter of Section 26, Township 4N, Range 4E of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. The site is currently undeveloped, and prior to Nationwide Realty Investor’s acquisition, was held in trust by the Arizona State Land Department (ASLD) as a portion of the overall Crossroads East development, which encompasses approximately 883 gross acres. The Grayhawk Residences at Cavasson development is located in the Northwest corner of the overall Crossroads East development, near the Legacy Boulevard and Miller Road intersection. The land naturally falls from northeast to southwest.

The project site is bounded by undeveloped desert to the south, Reveille Road to the east, North Miller Road to the west, and Legacy Boulevard to the north. The site location is shown in **Figure 1.1 – Vicinity Map**.

Figure 1.1 – Vicinity Map



1.3 Project Type

The Cavasson development is being developed by Nationwide Reality Investors as a master planned mixed use development with office, retail, hotels, and multifamily residential parcels with public and private roadways that run adjacent and through the development. The Grayhawk Residences at Cavasson will include construction of a new apartment complex with 402 dwelling units over the 18.6 acre site in multiple buildings. Improvements will also include surrounding access drives, parking, and extending existing private utility stubs to service the building.

The analyses of pre-development and post-development peak discharges were addressed in Hubbard's *Master Drainage Report Phase 3 update* and will be referenced and further discussed as it applies to the Grayhawk Residences at Cavasson.

1.4 Special Conditions- 404 Washes

Located throughout the project site are waters of the United States 404 washes. The handling of the 404 washes has been coordinated with engineering consultants and the City of Scottsdale. The Section 404 Certification form has been completed by consultants. As discussed in the *Master Drainage Report*, Hubbard has met with the Army Corps of Engineer (USACE) and worked with consultants and the Corps to complete a mitigation plan. Approval of the 404 permit was granted on April 2, 2019. That permit number is SPL-2018-00704. ADEQ has issued the 401 permit. This permit has been attached for reference in **Appendix G**.

1.5 Regulatory Criteria

The criterion used in the drainage design and analysis of the site was established using the guidelines as described in the following:

- City of Scottsdale, *Design Standards & Policies Manual*, January 18, 2018.
- City of Scottsdale, *Ordinance No. 4346*, June 17, 2018.
- *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology*.
- *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics*.

2. EXISTING DRAINAGE CONDITIONS

2.1 Existing Off-Site Conditions Characteristics

Development in the surrounding area has increased in the last decade and many of the surrounding properties which sit in the Reata Pass basin, part of the Pinnacle Peak South Area, have installed infrastructure to route the offsite flows through their developments. As-built plans for the developments show that channels and culverts have been constructed to divert and route off-site flows. Historical runoff for the areas on and surrounding the project site flow south towards collections points (i.e. existing culverts) where the off-site storm runoff is ultimately conveyed to the TPC golf course just north of the Central Arizona Project canal. Existing culverts located at the edges of Hayden Road are currently utilized to route off-site runoff. Off-site routing for the developed surrounding areas has been verified with their corresponding as-builts, including Hayden Road Improvement Plans, 76th Street & Infrastructure Design, Center Drive (now Legacy Boulevard) Improvements, and One Scottsdale Civic Center Improvement Plans.

Hubbard Engineering completed a *Master Drainage Report* which included an extensive analysis of the off-site flow conditions affecting the entire Crossroads East area, including Cavasson and Hayden Road, for the existing site and proposed development. Results from the study indicate that the storm event affecting the Grayhawk Residences at Cavasson is a 100-year, 6-hour storm event. Since the submittal of the *Master Drainage Report*, Hubbard has met with the City of Scottsdale and the developers south of the Cavasson development. It was determined in the meeting that the HEC-1 models be adjusted to reflect a time interval of 15 minutes rather than 3 minutes, as was originally modeled in TY Lin's report. The flows affecting the site will be discussed in section 3.1. Details on Hubbard's HEC-1 methodology and analyses, in addition to the modeling results, can be referenced in the approved *Cavasson Master Drainage Report Phase 3 Update* dated April 30, 2021.

The Grayhawk Residences at Cavasson site specifically is being impacted by two sets of dual barrel elliptical culverts crossing Legacy Boulevard in the existing condition. These culverts are conveying flow from basins SB01-B and SB01-C north of Legacy Boulevard.

2.2 On-site Drainage

As the Cavasson project site was undeveloped prior to Phase 1, there were no on-site drainage structures. The project site was included in two previous studies, Bob Ward's *Core North/ Core South Drainage Study* and TY Lin's *Pinnacle Peak South Area Drainage Master Study*. The TY Lin report analyzed the Crossroads East area and included FLO2d models combined with HEC-1 analyses on localized basins. The TY Lin report provided a basis on which Hubbard completed its hydrologic studies for the Cavasson project development.

The project site naturally falls from north to south at approximately 1.2% and approximately 0.7% east to west. The site outfall for the Grayhawk Residences at Cavasson occurs at the southern boundary of the project along Miller Road at an elevation of 1627'.

2.2.1 HEC-1 Analysis

The TY-Lin *Pinnacle Peak South Area Drainage Master Study* report provides an analysis of the entire Pinnacle Peak South Area, which covers an approximate area of 40 square miles. According to the report, the project site is located within the Dobson Wash Watershed, which includes inflow from the southwestern flow split of the Reata Pass Wash. TY Lin's existing and proposed exhibits and results can be found in **Appendices A** and **B**, respectively. Hubbard replicated TY-Lin's model in application to the approximate nine square miles including and surrounding the project site, shown in **Exhibit 1**, and included the inflow hydrographs from TY Lin's Master Drainage study to account for run-off affecting the project site from the 76th Street Channel and the Powerline for both the 100-year, 6-hour and 100-year, 24-hour storm events. Data collected for the model includes the precipitation, soil, and land use for the existing site conditions in application to the delineated sub-basins. All data Hubbard obtained and used in the model was compared to the existing TY Lin model for accuracy and adjusted accordingly based on current site conditions at maximum densities per approved zoning cases. Precipitation data was obtained from the NOAA Atlas 14 precipitation database. The map index used in DDMSW is 64, cells 687-689. Existing soil data was obtained from the United States Department of Agriculture's Natural Resources Conservation Service. Additionally, land use data was determined based on current zoning of the project site. Data for the HEC-1 analysis are in **Appendix C**. The results of the ultimate condition at full build out (after the powerline channel is constructed) are included in **Appendix D**.

Hubbard has met with the City of Scottsdale and the developers south of the Cavasson development in order to coordinate the analyses for the Crossroads East development. It was determined in the meeting that the HEC-1 models be adjusted to reflect a time interval of 15 minutes rather than 3 minutes, as was originally modeled in TY Lin's report. Thus, the inflow hydrographs provided by TY Lin were convoluted to accurately represent this change in time interval resulting in more accurate time to peak values. In addition, it was also decided in the meeting that Hubbard's analysis for the existing, proposed, and ultimate conditions will be used by developers south of Hayden Road. Hubbard's sub-basin delineation, shown in **Exhibit 1**, deviates from TY Lin's analysis in that Hubbard added collection points at existing culverts along Legacy Boulevard and Hayden road to model the peak flows coming through each infrastructure for utilization in routing design. Additionally, detailed analysis of the existing topography and as-builts along Hayden road and Legacy Boulevard revealed that the basins were not segmented by Hayden Road or Legacy Boulevard, in the TY Lin Report. These larger basins were subdivided in the Hubbard analysis and a similar naming convention was used to compare baseline flows.

Hubbard's analysis split the original TY Lin sub-basins 7 and 8 into east and west components to more accurately model the conveyance of the flows on either side of Hayden Road. An additional basin, SB09N was also added per the city's request as this was not included in the TY Lin analysis. In Hubbard's routing, flows from SB07E and SB08E are routed east, following the topography. Since the TY-Lin model does not delineate a SB-08W, the TY-Lin model shows the flow from SB08 flowing from the southwest corner of the basin east across Hayden Road. This analysis is not correct considering that the eastern elevation is approximately 20 feet higher than the western elevation (CP-08 in TY-Lin's exhibit). This routing also neglects the flow being conveyed across the Loop 101 from SB07W and SB08W. Hubbard therefore routed the flow from

SB07W and SB08W to the existing ADOT culvert along Frontage road and across the Loop 101, thus affecting the developments south of the Loop 101, a condition not represented in the TY-Lin report.

In TY-Lin's analysis, the 100-year, 24-hour storm event controlled for the entire area, with the 100-year, 6-hour storm event controlling the localized flows. TY-Lin recommended the creation of the Powerline Channel to intercept and route the 100-year, 24-hour flows to Basin 53R. Since it was determined in meetings with the City of Scottsdale that the channel will be built during construction of the Cavasson development, Hubbard's existing model includes this channel and results for the 100-year, 24-hour, 100-year, 6-hour, and 10-year, 6-hour storm events are shown in **Appendix D**. The Existing 100-year, 6-hour flows prior to the offsite channel being constructed were 196 cfs entering the site and an Existing condition 100-Year, 6-hour discharge exiting the site at the Loop 101 of 740 cfs. With the addition of the channel and routing to Basin 53R, a significant amount of flow is being diverted from the affected study area to Basin 53R. The addition of the channel results in higher peak flows for the Crossroads East development from the 100-year, 6-hour storm event rather than the 100-year, 24-hour storm.

In addition to the existing model post-channel and proposed model, Hubbard completed an ultimate condition model considering the surrounding lots will be developed. In the model, this was represented by increasing the imperviousness of SB01-B, SB01-C, and SB07W to reflect maximum assumed densities per the zoning stipulations pertinent to the Cavasson development and Cross Roads East approved zoning cases.

2.3 Flood Zone Information

The Maricopa County, Arizona and Incorporated Areas Flood Insurance Rate Map (F.I.R.M.) number 04013C1320L, Panel number 1320 of 4425, dated October 16, 2013 indicates that the Grayhawk Residences at Cavasson falls within Zone AO (Depth 1 foot) on the west side of the project with the remainder classified as Zone X.

Zone AO is defined as:

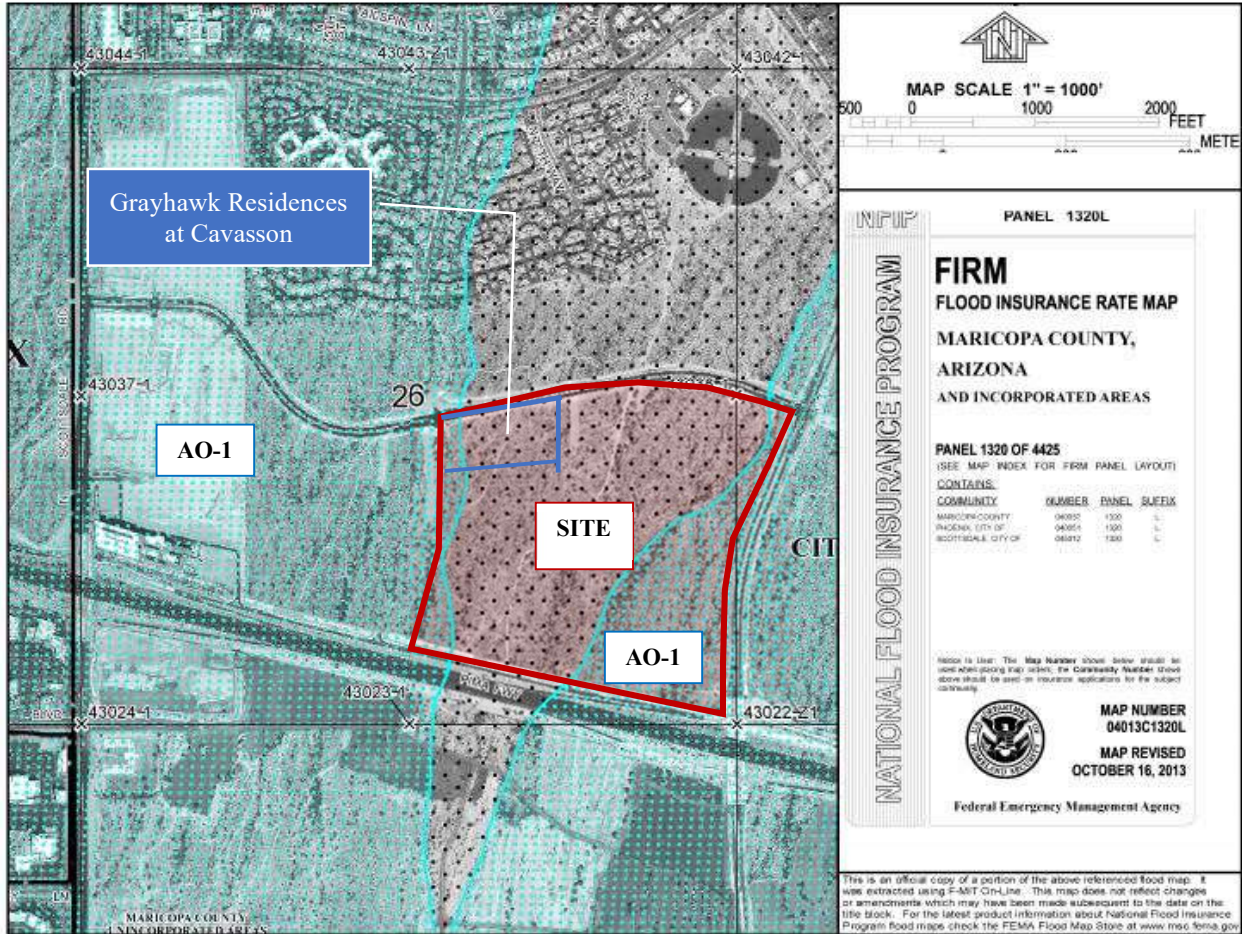
“Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.”

Zone X is defined as:

“Areas of 0.2% annual chance flood; areas of 1.0% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.”

Refer to FEMA Firmette in **Figure 2.1**.

Figure 2.1 – FIRM 04013C1320L



3. PROPOSED DRAINAGE PLAN

3.1 Off-Site Flows

Off-site flows for the site were analyzed and addressed in Hubbard’s *Master Drainage Report Phase 3 Update*. Results from the analysis show that after the powerline Channel is constructed 19 cfs is currently being conveyed across Legacy from the existing elliptical culvert located directly north of the Grayhawk Residences at Cavasson within Legacy Boulevard. When the parcel north of Legacy is developed, these flows are anticipated to increase to 50 cfs. These flows are now, however, being captured in a Offsite Storm Drain Network (Plan Check #1838-21) designed by Hubbard Engineering, construction expected to begin by November of 2021, that routes all of these offsite flows around the outside perimeter of the site prior to crossing Cavasson Boulevard. This allows the offsite flows to maintain their existing flow patterns without impacting the Grayhawk Residences at Cavasson. In the event that the Offsite Storm Drain System infrastructure fails, the offsite flow from north of Legacy would be contained within an existing swale to the north of Legacy Boulevard before entering an existing 10’x3’ curved box culvert that discharges the flow to the south of Legacy Boulevard and west of Miller Road. This flow would then continue along the west side of Miller Road before joining its historic flow pattern just south of Cavasson Boulevard. It should be noted that due to sedimentation within the existing culverts crossing Legacy Boulevard, this overflow route is already being used in this manner for some of the flow. This Offsite Storm Drain System was discussed in further detail within Hubbard’s *Master Drainage Report Phase 3 Update*.

The offsite flow from the adjacent Reveille Road will be conveyed to the site through an existing catch basin that will be tied directly into the onsite storm drain system. This offsite flow was calculated as part of the *Phase 3 Roads Drainage Report* written by Hubbard Engineering. Offsite flows from the adjacent half street of Miller Road will not impact the site because Miller Road was designed to convey all of its flow to two curb openings south of Cavasson Boulevard. The Grayhawk residences at Cavasson will still however retain the appropriate volume for the 100 year 6-hour storm event for the adjacent half street to remove those flows from the system. Likewise, the offsite flows from the adjacent half street of Legacy boulevard are being captured by the Offsite Storm Drain System and will not impact the site. The site will also still retain the appropriate equivalent volume for the adjacent half street of Legacy Boulevard. A summary of the offsite flows impacting the Grayhawk Residences at Cavasson can be found in **Table 1** below.

Contributing Area	Pre-Development Q100 (cfs)	Post Development Q100 (cfs)
SB01-B	19	0
SB01-C	19	0
Reveille Road	0	2.12

3.2 On-Site Hydraulics

The storm event affecting the site was determined to be a 100-year, 6-hour storm, as discussed in Hubbard's *Master Drainage Report Phase 3 Update*. The Grayhawk Residences at Cavasson will include the installation of several multifamily apartment buildings throughout the site as well as a parking lot and private drives servicing all of the buildings. Additionally, the Offsite Storm Drain System runs along the north and west boundaries of the site within an existing drainage easement.

See **Exhibit 2** for the drainage map. The onsite storm drain system for the Grayhawk Residences at Cavasson consists of two parallel systems running along the north and south drives of the site that are connected by equalized underground retention tanks. The north system ties into the end of one of the underground retention tanks with a 42-inch diameter HDPE pipe running along the north drive. This pipe will then become a 36-inch diameter HDPE pipe after about 300' and continues along the north drive. After another roughly 500' the storm drain bends to follow the main north drive and at this bend converts to a 24-inch diameter HDPE pipe before branching out to service the remainder of the north half of the site. Along this main run, there are several inlets that are teed off of the main run to drain front courtyards of buildings, accept flow from the drainage easement north of the site, and accept the flow from side parking lots for the buildings. The flows from adjacent building roof drains will sheet flow to inlets located along the north storm drain which will then convey them to the underground retention tanks.

The south storm drain system ties into the end of a different underground retention tank with a 48-inch diameter HDPE pipe that runs along the southern drive. The 48-inch diameter pipe becomes a 42-inch diameter HDPE pipe at a manhole structure after about 160 feet. At this same manhole structure, the storm drain system that drains the west half of the central common area enters the south storm drain system. The south storm drain system then continues along the drive for another 300 feet where the system that drains the east half of the central common area then enters the system through another manhole structure. The south storm drain system continues until it reaches a bend where it downsized to a 30-inch HDPE pipe before branching out to drain the remaining areas of the site. One of these branches ties in to the existing manhole that is connected to the Reveille Road catch basin to accept its flow. Similar to the north system, the south system has multiple inlets that are teed off of the main system to capture flow from different parking areas. Additionally, flows from adjacent building roof drains will sheet flow to inlets located along the south storm drain to be conveyed to the underground retention tanks.

There are six underground retention tanks that are all equalized together on the west side of the site near the drive entrance that the north and south storm drain systems drain to. Some of the tanks have inlets that take flow directly from the drainage area over the tanks and from the adjacent buildings roof drain leaders. In greater storm events and back-to-back storm events an emergency overflow has been provided for the retention tanks. A 12-inch diameter HDPE overflow pipe has been designed to connect into the riser of one of the underground retention tanks that will allow excess volume to overflow. This pipe runs down the drive entrance to connect to the Offsite Storm Drain System as an emergency overflow only. The Offsite Storm Drain System was designed to accept up to 20 cfs of emergency overflow from the site. For design purposes, the tailwater for the north and south storm drain systems was set at the top of the equalized tanks and the tailwater for the emergency overflow storm drain system was set at the HGL of the Offsite Storm Drain System at the connection point. Head loss for the pipes was calculated using Manning's Equation and head loss through the structures was calculated the equation $k\left(\frac{v^2}{2g}\right)$ where k is the junction loss

coefficient, v is the velocity exiting the junction and g is the acceleration of gravity. See **Appendix E** for hydrologic calculations and **Appendix F** for hydraulic calculations.

3.3 Storm Water Storage

The project development is required to provide retention for the first flush storm event for onsite and the 100 year 6-hour storm event for the adjacent half streets. The required first flush volume determined for each drainage area site will be designed per City of Scottsdale *Drainage Policies and Standards for Maricopa County, Arizona* (Reference 1). The first flush retention required for the site will be 29,095 cubic feet. The required retention for the adjacent half streets for the site is 30,674 cubic feet. This results in a total required retention of 59,769 which will be retained in 770 lf of 10' CMP underground retention tanks. These tanks provide a total of 60,319 cubic feet of retention which meets the requirement. The required and provided retention calculations can be found in **Appendix F**.

3.3.1 Time to Drain

Each site will be required to dewater the required storm water retention through natural percolation and/or drywells. The City of Scottsdale requires all retention facilities be completely drained within a 36-hour time frame. For design purposes, it was assumed that each drywell will have a percolation rate of 0.1 cfs. During construction, the first drywell constructed will be tested to verify this percolation rate. In the event that the tested percolation rate plus a clogging factor exceed 0.1 cfs, the number of drywell may be reduced while ensuring all retention facilities fully drain within 36 hours. Using this drywell discharge rate, it was determined that 5 separate drywells will be provided to drain the total volume of the underground retention tanks below the emergency outfall pipe located in the riser. This will allow the retention tanks to fully dewater in a total time of 33.5 hours. See **Appendix F** for drywell calculations.

4. SUMMARY AND CONCLUSION

- The site is located in Section 26 of Township 4N, Range 4E of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
- The site is partially located in the Flood Plain Zone AO-1 on the west side and in Flood Plain Zone X on the remainder.
- The Finish Floor Elevations of the proposed buildings meet the requirement of 2 feet higher than the natural grade (HAG) within the Zone AO-1 flood zone.
- The storm event affecting the site was modeled as a 100-yr, 6-hour event in Hubbard's *Master Drainage Report* due to being more conservative.
- The Offsite Storm Drain System mitigates the offsite flows from north of Legacy Boulevard. The sites onsite storm drain system is directly accepting the offsite flows from Reveille Road.
- The site will be required to provide retention for the first flush storm event for onsite and provide retention for the 100-year 6-hour storm event for the adjacent half street roads.
- 770 lf of 10' CMP retention will provide 60,319 cf of retention, for the required retention of 59,769 cf.

5. REFERENCES

- 1) City of Scottsdale. *Drainage Policies & Standards for Maricopa County, Arizona*. January 18, 2018.
- 2) Flood Control District of Maricopa County. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology*. November 2003.
- 3) Flood Control District of Maricopa County. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics*. November 2003.
- 4) Flood Control District of Maricopa County. *Drainage Design Manual for Maricopa County, Arizona, Volume III, Erosion*. July 2018.
- 5) City of Scottsdale. *Ordinance No. 4346*. June 17, 2018.
- 6) TY Lin, *Pinnacle Peak South Area Drainage Master Study*, 2014.
- 7) City of Scottsdale, *Ordinance No. 4346*, June 17, 2018.
- 8) Hubbard Engineering, *Master Drainage Report*. December 23, 2018
- 9) Hubbard Engineering, *Master Drainage Report Phase 3 Update*, August 19, 2021

6. LIMITATIONS

This report is focused on providing practical design information, evaluation, and calculations for statistical flood events up to and including the 100-year frequency flood. The procedures used herein are derived from, and performed with, currently accepted engineering methodologies and practices. Additionally, the criteria for this evaluation is designed to conform to currently applicable ordinances, regulations and policies effected by the appropriate jurisdictional regulatory authorities for the site.

The analysis presented herein focuses on developing design estimates of storm water runoff resulting from a statistical evaluation of storm events of particular duration and frequency up to and including a 100-year frequency event. A storm event exceeding the 100-year frequency event may cause or create the risk of greater flood impact than is addressed and presented herein. However, the scope of this assessment does not include evaluation of storm water runoff resulting from storm events exceeding the 100-year frequency event. Hubbard Engineering assumes no responsibility for actual flood damage, increased risks of flood damage, or increased construction or development cost resulting from or related to any such events.

Nor shall Hubbard Engineering be responsible for any changes in, or additions to, regulatory requirements which may result from, or be related to, any such events or changes in hydrologic or hydraulic conditions within the watershed.

In performing the services contained herein, Hubbard Engineering has received or will receive information prepared or compiled by others. Hubbard Engineering, as engineering professionals, are not required to verify the information, but may rely on the information unless actual knowledge concerning the validity of the information is known or is obvious to the professional. Therefore, Hubbard Engineering is entitled to rely upon the accuracy and completeness of this information without independent evaluation or verification.

Appendix A
TY Lin HEC-1 Existing
Grayhawk Residences at Cavasson

WATERSHED MAP

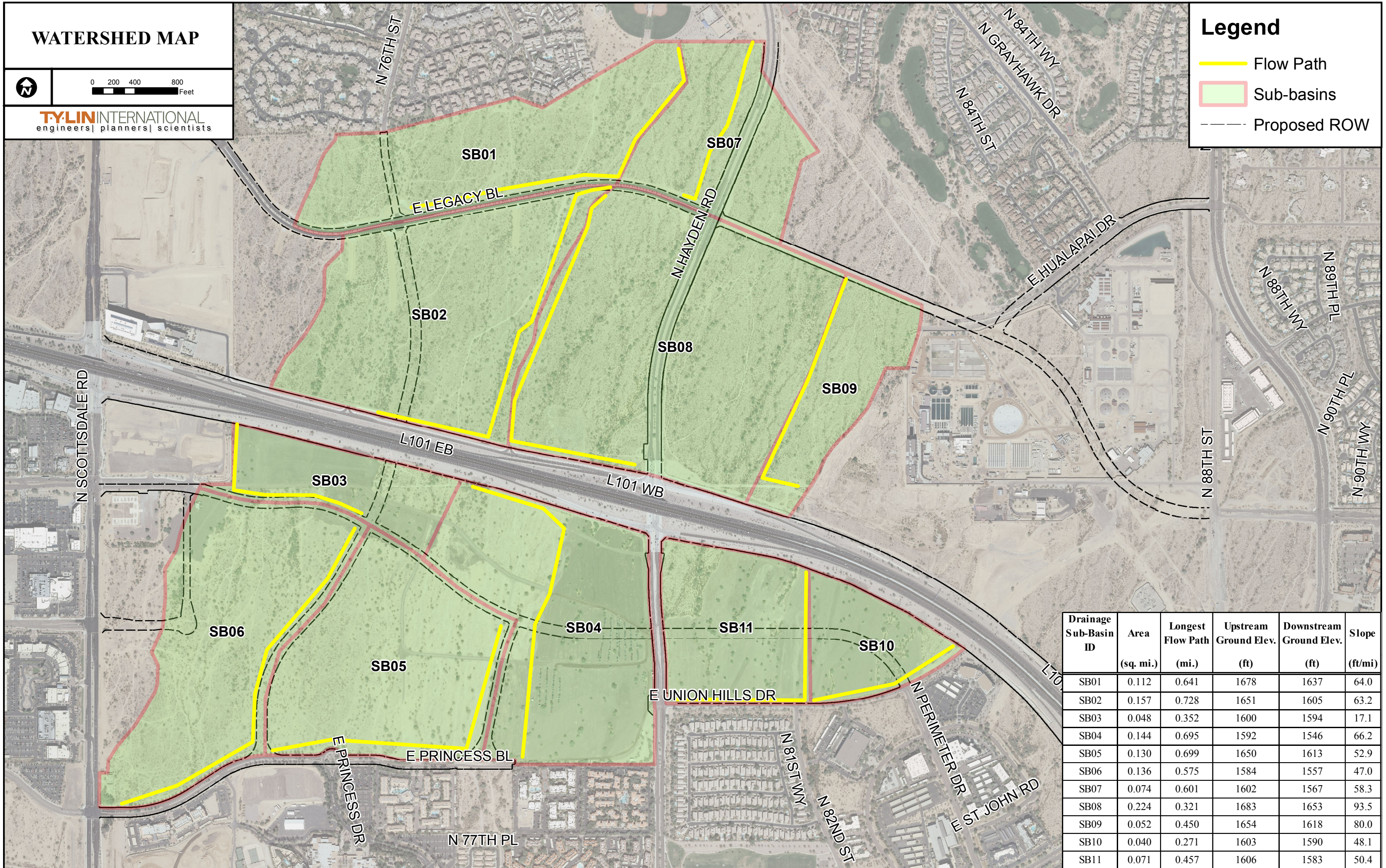


0 200 400 800 Feet

TYLIN INTERNATIONAL
engineers | planners | scientists

Legend

- Flow Path
- Sub-basins
- Proposed ROW



Drainage Sub-Basin ID	Area (sq. mi.)	Longest Flow Path (mi.)	Upstream Ground Elev. (ft)	Downstream Ground Elev. (ft)	Slope (ft/mi)
SB01	0.112	0.641	1678	1637	64.0
SB02	0.157	0.728	1651	1605	63.2
SB03	0.048	0.352	1600	1594	17.1
SB04	0.144	0.695	1592	1546	66.2
SB05	0.130	0.699	1650	1613	52.9
SB06	0.136	0.575	1584	1557	47.0
SB07	0.074	0.601	1602	1567	58.3
SB08	0.224	0.321	1683	1653	93.5
SB09	0.052	0.450	1654	1618	80.0
SB10	0.040	0.271	1603	1590	48.1
SB11	0.071	0.457	1606	1583	50.4


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

LINE	ID	1	2	3	4	5	6	7	8	9	10	
1	ID	CROSS ROADS EAST DRAINAGE INFRASTRUCTURE										
2	ID	RESERVOIR ROUTING OF BASIN N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ										
3	ID	INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:										
4	ID	100-YR, 24-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND										
5	ID	PIMA ROAD FLOWS)										
6	ID											
7	ID	PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14										
8	ID	MODELERS: RK, MW										
9	ID											
10	IT	3	0	0	1000							
11	IN	3										
12	IO	5										
		*DIAGRAM										
		*										
13	JD	3.849	0.0001									
14	PC	0.000	0.002	0.005	0.008	0.011	0.014	0.017	0.020	0.023	0.026	
15	PC	0.029	0.032	0.035	0.038	0.041	0.044	0.048	0.052	0.056	0.060	
16	PC	0.064	0.068	0.072	0.076	0.080	0.085	0.090	0.095	0.100	0.105	
17	PC	0.110	0.115	0.120	0.126	0.133	0.140	0.147	0.155	0.163	0.172	
18	PC	0.181	0.191	0.203	0.218	0.236	0.257	0.283	0.387	0.663	0.707	
19	PC	0.735	0.758	0.776	0.791	0.804	0.815	0.825	0.834	0.842	0.849	
20	PC	0.856	0.863	0.869	0.875	0.881	0.887	0.893	0.898	0.903	0.908	
21	PC	0.913	0.918	0.922	0.926	0.930	0.934	0.938	0.942	0.946	0.950	
22	PC	0.953	0.956	0.959	0.962	0.965	0.968	0.971	0.974	0.977	0.980	
23	PC	0.983	0.986	0.989	0.992	0.995	0.998	1.000				
24	JD	3.657	10.0									
25	JD	3.533	20.0									
		*										
26	KK	76THST										
27	KM	76TH ST CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS										
28	KM	100-YR, 6-HR FLO-2D MODEL (XS 98)										
29	BA	0.24										
30	QI	0	0	0	0	0	0	0	0	0	0	
31	QI	0	0	0	0	0	0	0	0	0	0	
32	QI	0	0	0	0	0	0	0	0	0	0	
33	QI	0	0	0	0	0	0	0	0	0	0	
34	QI	0	0	0	0	0	0	0	0	0	0	
35	QI	0	0	0	0	0	0	0	0	0	0	
36	QI	0	0	0	0	0	0	0	0	0	0	
37	QI	0	0	0	0	0	0	0	0	0	0	
38	QI	0	0	0	0	0	0	0	0	0	0	
39	QI	0	0	0	0	0	0	0	0	0	0	
40	QI	0	0	0.01	0	0	0	0	0	0	0	
41	QI	0	0	0	0	0	0	0	0	0	0	
42	QI	0	0	0	0	0	0	0	0	0	0	
43	QI	0	0	0	0	0	0	0	0	0	0	

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44	QI	0	0	0	0	0.01	0	0	0	0
45	QI	0	0	0	0	0	0	0	0	0
46	QI	0	0	0	0	0	0	0	0	0
47	QI	0.01	0	0	0.01	0	0	0	0.01	0.01
48	QI	0	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
49	QI	0.03	0.04	0.04	0.05	0.05	0.05	0.06	0.07	0.08
50	QI	0.09	0.09	0.1	0.1	0.11	0.11	0.12	0.13	0.14
51	QI	0.14	0.15	0.16	0.18	0.19	0.21	0.23	0.25	0.27

HEC-1 INPUT

1

LINE	ID	1	2	3	4	5	6	7	8	9	10
52	QI	0.34	0.36	0.4	0.44	0.47	0.51	0.56	0.6	0.66	0.71
53	QI	0.76	0.95	1.61	1.73	1.95	3.7	4.26	6.53	8.52	10.41
54	QI	17.69	31.39	35.75	41.23	44.49	47.79	51.13	56.33	62.34	66.18
55	QI	68.57	67.36	65.05	61.38	58.37	54.61	52.38	50.75	48.4	44.37
56	QI	42.75	40.4	38.91	37.61	36.75	35.61	34.75	34.25	33.52	32.65
57	QI	32.34	31.59	31.31	30.73	30.02	29.25	28.51	28.42	27.67	26.83
58	QI	26.13	25.37	24.53	23.95	23.37	22.83	22.17	21.48	20.81	20.94
59	QI	19.41	19.05	18.62	18.3	18.17	18.11	17.52	17.1	16.7	16.5
60	QI	16.15	15.74	15.37	15.07	14.74	14.54	14.51	14.24	14.07	13.65
61	QI	13.75	13.24	12.99	13.09	12.94	12.53	12.53	12.38	12.22	12.18
62	QI	12	11.59	11.89	11.53	11.85	11.44	11.16	11.22	11.21	10.82
63	QI	10.52	10.43	10.88	10.42	10.1	9.81	9.72	9.66	9.78	9.55
64	QI	9.34	9.36	9.33	9.23	9.1	9.09	9.48	9.3	9.02	9.07
65	QI	9.11	9.1	8.93	8.81	8.73	8.71	8.57	8.5	8.5	8.43
66	QI	8.37	8.31	8.26	8.17	8.14	8.05	7.98	7.97	7.83	7.62
67	QI	7.67	7.67	7.57	7.66	7.74	7.75	7.91	7.88	7.62	7.55
68	QI	7.47	7.3	7.22	7.25	7.2	7.08	7.02	7.01	6.99	6.96
69	QI	6.97	6.92	6.89	6.85	6.81	6.77	6.75	6.7	6.67	6.62
70	QI	6.59	6.56	6.51	6.48	6.47	6.44	6.44	6.47	6.43	6.37
71	QI	6.32	6.27	6.23	6.22	6.16	6.12	6.08	6.05	6.02	5.98
72	QI	5.95	5.95	5.95	5.93	5.9	5.87	5.84	5.76	5.72	5.64
73	QI	5.7	5.76	5.62	5.65	5.74	5.84	5.95	4.5	4.58	5.32
74	QI	5.41	5.43	4.49	5.32	5.36	5.44	5.48	5.6	5.67	4.68
75	QI	4.56	4.55	4.53	4.82	4.84	4.81	4.81	4.83	4.82	4.6
76	QI	4.75	4.82	4.66	4.85	4.81	4.78	4.77	4.75	4.73	4.72
77	QI	4.69	4.64	4.62	4.61	4.63	4.67	4.71	4.72	4.71	4.66
78	QI	4.61	4.53	4.43	4.39	4.37	4.36	4.33	4.33	4.28	4.26
79	QI	4.2	4.17	4.13	4.07	4.03	4	3.96	3.92	3.86	3.8
80	QI	3.75	3.71	3.65	3.6	3.56	3.51	3.45	3.42	3.39	2.43
81	QI	2.49	2.39	2.38	3.55	3.52	3.43	2.35	2.4	2.46	3.65
82	QI	3.61	3.3	2.37	2.4	2.46	3.65	3.59	3.59	3.61	3.67
83	QI	2.48	2.53	2.53	2.47	2.41	2.36	2.32	2.28	2.25	2.22
84	QI	2.19	2.16	2.14	2.12	2.09	2.07	2.04	2.02	2	1.97
85	QI	1.94	1.91	1.88	1.85	1.8	1.72	1.63	1.56	1.58	1.65
86	QI	1.71	1.72	1.67	1.57	1.49	1.36	1.49	1.56	1.58	1.57
87	QI	1.48	1.35	1.21	1.15	1.13	1.13	1.13	1.13	1.13	1.13
88	QI	1.13	1.13	1.12	1.14	1.17	1.2	1.23	1.22	1.18	1.09
89	QI	1.1	1.11	1.13	1.18	1.26	1.06	1.1	1.08	1.06	1.05
90	QI	1.06	1.05	1.04	1.02	1.01	1	0.98	0.97	0.96	0.95
91	QI	0.94	0.93	0.92	0.91	0.9	0.89	0.88	0.87	0.86	0.86
92	QI	0.85	0.84	0.84	0.83	0.82	0.81	0.8	0.8	0.79	0.78
93	QI	0.78	0.77	0.76	0.76	0.75	0.74	0.73	0.73	0.72	0.72
94	QI	0.72	0.71	0.71	0.71	0.7	0.7	0.69	0.69	0.68	0.67
95	QI	0.67	0.66	0.66	0.65	0.65	0.64	0.64	0.63	0.63	0.62
96	QI	0.62	0.61	0.61	0.6	0.6	0.59	0.59	0.59	0.58	0.58
97	QI	0.57	0.57	0.56	0.56	0.56	0.55	0.55	0.54	0.54	0.53
98	QI	0.53	0.53	0.52	0.52	0.52	0.51	0.51	0.5	0.5	0.5
99	QI	0.49	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46
100	QI	0.45	0.45	0.45	0.44	0.44	0.44	0.43	0.43	0.43	0.42
101	QI	0.42	0.42	0.41	0.41	0.41	0.4	0.4	0.4	0.4	0.39
102	QI	0.39	0.39								

*

HEC-1 INPUT

1

LINE	ID	1	2	3	4	5	6	7	8	9	10
103	KK	SB01	BASIN								
104	BA	0.112									
105	LG	0.25	0.25	4.10	0.55	45					
106	UC	0.318	0.253								
107	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
108	UA	100									
	*										
109	KK	CP-1	COMBINE								
110	KM		LEGACY BLVD AND 76TH ST (MILLER RD CHANNEL)								
111	HC	2									
	*										
112	KK	R1-2	ROUTE								
113	KM		MILLER RD CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY								
114	RK	2104	0.0015	0.03		TRAP	66	4			
	*										
115	KK	SB02	BASIN								
116	BA	0.157									
117	LG	0.15	0.25	4.15	0.58	56					
118	UC	0.328	0.240								
119	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
120	UA	100									
	*										

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121 KK CP-2 COMBINE
 122 KM SR 101L FREEWAY AND 76TH ST (MILLER RD CHANNEL)
 123 HC 2
 *

124 KK R2-3 ROUTE
 125 KM MILLER RD CHANNEL FROM SR 101L FREEWAY TO MAYO BLVD
 126 RK 1260 0.0015 0.03 TRAP 92 4
 *

127 KK SB03 BASIN
 128 BA 0.048
 129 LG 0.15 0.25 4.50 0.47 55
 130 UC 0.364 0.294
 131 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 132 UA 100
 *

133 KK CP-3 COMBINE
 134 KM MAYO BLVD AND 76TH ST (MILLER RD CHANNEL)
 135 HC 2
 *

1

HEC-1 INPUT

PAGE 4

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

136 KK R3-5 ROUTE
 137 KM MILLER RD CHANNEL FROM MAYO BLVD TO PRINCESS BLVD
 138 RK 2396 0.0015 0.03 TRAP 98 4
 *

139 KK SB04 BASIN
 140 BA 0.144
 141 LG 0.14 0.25 4.60 0.44 61
 142 UC 0.305 0.199
 143 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 144 UA 100
 *

145 KK R4-5 ROUTE
 146 KM PRINCESS BLVD CHANNEL FROM 77TH ST TO 76TH ST
 147 RK 2005 0.0013 0.03 TRAP 39 4
 *

148 KK SB05 BASIN
 149 BA 0.126
 150 LG 0.22 0.25 4.50 0.44 48
 151 UC 0.327 0.226
 152 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 153 UA 100
 *

154 KK CP-5 COMBINE
 155 KM PRINCESS BLVD AND 76TH ST (PRINCESS BLVD CHANNEL)
 156 HC 3
 *

157 KK R5-6 ROUTE
 158 KM PRINCESS BLVD CHANNEL FROM 76TH ST TO SCOTTSDALE RD
 159 RK 1550 0.0015 0.03 TRAP 188 4
 *

160 KK SB06 BASIN
 161 BA 0.136
 162 LG 0.16 0.25 4.55 0.45 53
 163 UC 0.321 0.246
 164 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 165 UA 100
 *

166 KK CP-6 COMBINE
 167 KM PRINCESS BLVD AND SCOTTSDALE RD (PRINCESS BLVD CHANNEL)
 168 HC 2
 *

1

HEC-1 INPUT

PAGE 5

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

169 KK SB07 BASIN
 170 BA 0.074
 171 LG 0.21 0.25 4.00 0.58 49
 172 UC 0.206 0.113
 173 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 174 UA 100
 *

175 KK R7-8 ROUTE
 176 KM HAYDEN ROAD NORTH CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY
 177 RK 2778 0.0014 0.03 TRAP 46 4
 *

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178	KK	SB08	BASIN								
179	BA	0.224									
180	LG	0.14	0.25	4.10	0.59	59					
181	UC	0.338	0.195								
182	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
183	UA	100									
	*										
184	KK	CP-8	COMBINE								
185	KM	SR 101L	FREEWAY AND HAYDEN ROAD (HAYDEN ROAD NORTH CHANNEL)								
186	HC	2									
	*										
187	KK	R8-9	ROUTE								
188	KM	HAYDEN ROAD NORTH CHANNEL	FROM HAYDEN ROAD TO BASIN 53R								
189	RK	1250	0.0013	0.03	TRAP	67	4				
	*										
190	KK	SB09	BASIN								
191	BA	0.052									
192	LG	0.15	0.25	4.00	0.61	55					
193	UC	0.254	0.230								
194	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
195	UA	100									
	*										
196	KK	CP-9	COMBINE								
197	KM	SR 101L	FREEWAY AND BASIN 53R (HAYDEN ROAD NORTH CHANNEL)								
198	HC	2									
	*										
199	KK	PWRCH									
200	KM	POWERLINE CHANNEL (XS 107) & 50% PIMA ROAD CHANNEL (XS 183)	HYDROGRAPHS								
201	KM	FROM PINNACLE PEAK SOUTH ADMS 100-YR, 24-HR FLO-2D MODEL									
202	BA	7.0									
203	QI	0	0	0	0	0	0	0	0	0	0
204	QI	0	0	0	0	0	0	0	0	0	0
205	QI	0	0	0	0	0	0	0	0	0	0
206	QI	0	0	0	0	0	0	0	0	0	0
207	QI	0	0	0	0	0	0	0	0	0	0
208	QI	0	0	0	0	0	0	0	0	0	0

1

HEC-1 INPUT

PAGE 6

LINE	ID	1	2	3	4	5	6	7	8	9	10
209	QI	0	0	0	0	0	0	0	0	0	0
210	QI	0	0	0	0	0	0	0	0	0	0
211	QI	0	0	0	0	0	0	0	0	0	0
212	QI	0	0	0	0	0	0	0	0	0	0
213	QI	0	0	0	0	0	0	0	0	0	0
214	QI	0	0	0	0	0	0	0	0	0	0
215	QI	0	0	0	0	0	0	0	0	0	0
216	QI	0	0	0	0	0	0	0	0	0	0
217	QI	0	0	0	0	0	0	0	0	0	0
218	QI	0	0	0	0	0	0	0	0	0	0
219	QI	0	0	0	0	0	0	0	0	0	0
220	QI	0	0	0	0	0	0	0	0	0	0
221	QI	0	0	0	0	0	0	0	0	0	0
222	QI	0	0	0	0	0	0	0	0	0	0
223	QI	0	0	0	0	0	0	0	0	0	0
224	QI	0	0	0	0	0	0	0	0	0	0
225	QI	0	0	1	1	1	1	1	1	1	1
226	QI	1	2	2	2	3	3	5	9	18	28
227	QI	43	50	65	87	194	495	872	967	1051	1095
228	QI	1099	1091	1093	1100	1117	1198	1243	1370	1495	1777
229	QI	2055	2422	2906	3246	3546	3747	3874	3884	3837	3741
230	QI	3658	3562	3456	3370	3270	3175	3085	3024	2955	2888
231	QI	2822	2744	2640	2543	2461	2378	2309	2239	2183	2132
232	QI	2084	2045	2005	1973	1933	1898	1860	1821	1779	1740
233	QI	1699	1659	1619	1576	1544	1499	1461	1432	1397	1364
234	QI	1331	1298	1268	1237	1206	1179	1152	1126	1100	1074
235	QI	1047	1023	1000	979	959	940	918	901	882	867
236	QI	851	834	818	803	789	773	759	744	731	719
237	QI	705	693	683	670	657	645	635	627	617	608
238	QI	597	588	581	573	566	559	553	545	537	529
239	QI	521	514	507	501	495	488	482	476	471	465
240	QI	460	456	450	444	440	435	429	424	419	414
241	QI	410	404	400	396	393	387	385	381	377	375
242	QI	370	367	364	362	360	356	352	349	346	343
243	QI	339	338	334	333	330	328	326	322	318	315
244	QI	317	313	308	306	305	303	300	298	295	294
245	QI	293	291	288	285	286	281	278	276	275	276
246	QI	270	265	269	267	264	257	265	257	255	255
247	QI	258	251	251	253	245	248	247	242	246	239
248	QI	240	241	236	238	232	237	231	231	228	231
249	QI	223	227	223	223	221	220	219	215	219	215
250	QI	214	215	211	215	211	209	213	209	207	208
251	QI	205	201	207	200	200	201	201	199	197	193
252	QI	192	190	190	191	189	188	187	185	186	184
253	QI	180	179	180	173	173	179	169	172	164	169
254	QI	164	165	163	161	156	158	155	158	153	158
255	QI	149	153	146	144	146	142	149	139	136	138
256	QI	137	143	131	130	132	126	126	124	123	133
257	QI	120	119	124	117	116	117	114	111	113	109

PhaseI_Basin.out											
258	QI	107	109	105	106	104	102	104	100	99	103
259	QI	97	96	100	94	93	99	91	90	97	88
260	QI	86	90	84	85	87	83	83	85	80	79
261	QI	82	78	75	82	74	74	82	72	71	76
262	QI	70	71	70	68	72	66	67	65	64	69
263	QI	62	65	61	61	63	59	65	58	58	60

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
264	QI	57	63	56	55	58	55	58	54	52	58
265	QI	52	52	53	50	57	50	50	55	48	48
266	QI	50	46	47	47	44	48	45	43	49	43
267	QI	42	48	42	41	45	41	40	44	40	38
268	QI	40	40	38	37	40	37	36	42	36	36
269	QI	35	41	35	34	34	40	34	33	33	33
270	QI	36	33	32	32	33	32	31	31	30	33
271	QI	31	30	29	29	31	30	28	29	28	29
272	QI	31	28	28	27	27	30	27	26	26	26
273	QI	31	26	25	25	25	30	26	25	25	24
274	QI	24	28	23	23	24	23	24	25	24	23
275	QI	23	22								

*

276 KK BINFLO
 277 KM TOTAL INFLOW INTO BASIN 53R.
 278 HC 2
 *

279 KK BASIN
 280 KM BASIN STAGE/STORAGE FROM PROPOSED CONTOURS BETWEEN
 281 KM ELEV 1594 AND 1615; BASIN SIDE SLOPES STEEPENED TO 3:1
 282 KM OUTFLOW RATING CURVE FROM CULVERTMASTER FOR 2-60" PIPES
 283 KM THE OUTFLOW PIPES ARE INLET CONTROLLED.
 284 RS 1 STOR 0
 285 SV 0 44.9 76.8 108.7 140.6 171.5 202.5 233.5 264.5 295.5
 286 SV 328.7 362.0 395.2 428.5 461.7 497.2 532.7 568.3 603.8 639.3
 287 SE 1594 1597 1598 1599 1600 1601 1602 1603 1604 1605
 288 SE 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615
 289 SQ 0 94.6 153.4 209.8 244.2 264.5 284.0 302.5 320.1 336.9
 290 SQ 353.0 368.5 383.5 398.0 412.0 425.7 438.9 451.9 464.5 476.8
 *

291 KK BSNRT1
 292 KM 2-60" CMP OULFLOW PIPES FOR BASIN 53R UNDER SR 101L FREEWAY.
 293 KM DOWNSTREAM CONNECTING PIPES ARE 60-INCH RCP AND WILL HAVE
 294 KM EXCESS CAPACITY.
 295 RK 550 0.0052 0.024 CIRC 7.0
 *

296 KK BSNRT2
 297 KM 2-60" RCP PIPES FROM SR 101L FREEWAY TO UNION HILLS DR (BASIN 53R OUTFAL
 298 RK 1200 0.0077 0.013 CIRC 7.0
 *

299 KK SB10 BASIN
 300 BA 0.040
 301 LG 0.15 0.25 4.25 0.55 55
 302 UC 0.233 0.161
 303 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 304 UA 100
 *

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
305	KK	CP-10 COMBINE									
306	KM	UNION HILLS DR AND 82ND ST (UNION HILLS DR CHANNEL)									
307	HC	2									
	*										
308	KK	R10-11 ROUTE									
309	KM	UNION HILLS DR CHANNEL FROM 82ND ST TO HAYDEN ROAD									
310	RK	1277	0.0014	0.03		TRAP	220	4			
	*										
311	KK	SB11 BASIN									
312	BA	0.071									
313	LG	0.15	0.25	4.15	0.58	55					
314	UC	0.296	0.232								
315	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
316	UA	100									
	*										
317	KK	CP-11 COMBINE									
318	KM	UNION HILLS DR AND HAYDEN ROAD (HAYDEN RD SOUTH CHANNEL)									
319	HC	2									
	*										
320	ZZ										

SCHEMATIC DIAGRAM OF STREAM NETWORK

LINE	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
26	76THST	
	.	
103	.	SB01
	.	.
109	CP-1.....	.
	V	
	V	
112	R1-2	
	.	
115	.	SB02
	.	.
121	CP-2.....	.
	V	
	V	
124	R2-3	
	.	
127	.	SB03
	.	.
133	CP-3.....	.
	V	
	V	
136	R3-5	
	.	
139	.	SB04
	.	V
	.	V
145	.	R4-5
	.	.
148	.	SB05
	.	.
154	CP-5.....	.
	V	
	V	
157	R5-6	
	.	
160	.	SB06
	.	.
166	CP-6.....	.
	.	
169	.	SB07
	.	V
	.	V
175	.	R7-8
	.	.
178	.	SB08
	.	.
184	.	CP-8.....
	.	V
	.	V
187	.	R8-9
	.	.
190	.	SB09
	.	.
196	.	CP-9.....
	.	.
199	.	PWRCH
	.	.
276	.	BINFLO.....
	.	V
	.	V
279	.	BASIN
	.	V
	.	V
291	.	BSNRT1
	.	V
	.	V
296	.	BSNRT2
	.	.
299	.	SB10
	.	.
	.	.

				PhaseI_Basin.out				
+		CP-1	276.	2.55	30.	15.	8.	0.35
	ROUTED TO							
+		R1-2	273.	2.70	30.	15.	8.	0.35
	HYDROGRAPH AT							
+		SB02	410.	2.55	46.	12.	6.	0.16
	2 COMBINED AT							
+		CP-2	627.	2.65	76.	26.	13.	0.51
	ROUTED TO							
+		R2-3	618.	2.70	76.	26.	13.	0.51
	HYDROGRAPH AT							
+		SB03	111.	2.60	14.	4.	2.	0.05
	2 COMBINED AT							
+		CP-3	720.	2.70	90.	30.	15.	0.56
	ROUTED TO							
+		R3-5	713.	2.80	90.	30.	15.	0.56
	HYDROGRAPH AT							
+		SB04	440.	2.55	45.	11.	5.	0.14
	ROUTED TO							
+		R4-5	432.	2.65	45.	11.	5.	0.14
	HYDROGRAPH AT							
+		SB05	340.	2.55	36.	9.	4.	0.13
	3 COMBINED AT							
+		CP-5	1265.	2.75	170.	50.	25.	0.83
	ROUTED TO							
+		R5-6	1242.	2.80	169.	50.	25.	0.83
	HYDROGRAPH AT							
+		SB06	355.	2.55	40.	10.	5.	0.14
	2 COMBINED AT							
+		CP-6	1466.	2.80	208.	60.	29.	0.96
	HYDROGRAPH AT							
+		SB07	322.	2.50	21.	5.	2.	0.07
	ROUTED TO							
+		R7-8	310.	2.65	21.	5.	3.	0.07
	HYDROGRAPH AT							
+		SB08	660.	2.55	68.	17.	8.	0.22
	2 COMBINED AT							
+		CP-8	903.	2.65	89.	22.	11.	0.30
	ROUTED TO							
+		R8-9	880.	2.70	89.	22.	11.	0.30
	HYDROGRAPH AT							
+		SB09	147.	2.55	15.	4.	2.	0.05
	2 COMBINED AT							
+		CP-9	985.	2.70	104.	26.	12.	0.35
	HYDROGRAPH AT							
+		PWRCH	3884.	13.35	1547.	503.	248.	7.00
	2 COMBINED AT							
+		BINFLO	3884.	13.35	1547.	503.	260.	7.35
	ROUTED TO							
+		BASIN	463.	18.45	458.	399.	251.	7.35
	ROUTED TO							
+		BSNRT1	463.	18.50	458.	399.	251.	7.35
	ROUTED TO							
+		BSNRT2	463.	18.50	458.	399.	251.	7.35
	HYDROGRAPH AT							
+		SB10	141.	2.50	12.	3.	1.	0.04
	2 COMBINED AT							
+		CP-10	463.	18.50	458.	399.	252.	7.39
	ROUTED TO							
+		R10-11	463.	18.55	458.	399.	252.	7.39
	HYDROGRAPH AT							
+		SB11	195.	2.55	21.	5.	3.	0.07
	2 COMBINED AT							
+		CP-11	463.	18.55	458.	399.	254.	7.46

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

INTERPOLATED TO
COMPUTATION INTERVAL

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R1-2	MANE	3.00	287.35	160.24	1.72	3.00	284.38	162.00	1.72
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3222E+02 EXCESS=0.0000E+00 OUTFLOW=0.3226E+02 BASIN STORAGE=0.5145E-01 PERCENT ERROR=-0.3

FOR STORM = 2 STORM AREA (SQ MI) = 10.00

R1-2	MANE	3.00	270.30	162.31	1.67	3.00	267.71	162.00	1.67
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3132E+02 EXCESS=0.0000E+00 OUTFLOW=0.3135E+02 BASIN STORAGE=0.5145E-01 PERCENT ERROR=-0.3

FOR STORM = 3 STORM AREA (SQ MI) = 20.00

R1-2	MANE	3.00	259.93	162.15	1.64	3.00	259.40	162.00	1.64
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3073E+02 EXCESS=0.0000E+00 OUTFLOW=0.3080E+02 BASIN STORAGE=0.5496E-01 PERCENT ERROR=-0.4

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R2-3	MANE	1.51	651.07	161.96	2.07	3.00	651.05	162.00	2.07
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5609E+02 EXCESS=0.0000E+00 OUTFLOW=0.5610E+02 BASIN STORAGE=0.3635E-01 PERCENT ERROR=-0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00

R2-3	MANE	1.68	617.22	162.52	1.98	3.00	607.09	162.00	1.98
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5389E+02 EXCESS=0.0000E+00 OUTFLOW=0.5385E+02 BASIN STORAGE=0.3635E-01 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00

R2-3	MANE	1.57	606.67	162.84	1.93	3.00	594.12	162.00	1.94
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5252E+02 EXCESS=0.0000E+00 OUTFLOW=0.5252E+02 BASIN STORAGE=0.3881E-01 PERCENT ERROR=-0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R3-5 MANE 2.90 746.61 169.74 2.14 3.00 740.89 168.00 2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6349E+02 EXCESS=0.0000E+00 OUTFLOW=0.6368E+02 BASIN STORAGE=0.7132E-01 PERCENT ERROR=-0.4

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
 R3-5 MANE 2.99 705.69 168.12 2.05 3.00 703.45 168.00 2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6077E+02 EXCESS=0.0000E+00 OUTFLOW=0.6099E+02 BASIN STORAGE=0.7609E-01 PERCENT ERROR=-0.5

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
 R3-5 MANE 2.97 683.83 168.92 2.00 3.00 669.67 168.00 2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5920E+02 EXCESS=0.0000E+00 OUTFLOW=0.5943E+02 BASIN STORAGE=0.7619E-01 PERCENT ERROR=-0.5

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R4-5 MANE 2.44 447.26 159.45 3.02 3.00 444.07 159.00 3.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2308E+02 EXCESS=0.0000E+00 OUTFLOW=0.2320E+02 BASIN STORAGE=0.4656E-04 PERCENT ERROR=-0.5

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
 R4-5 MANE 2.59 429.78 158.16 2.87 3.00 425.33 159.00 2.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2182E+02 EXCESS=0.0000E+00 OUTFLOW=0.2203E+02 BASIN STORAGE=0.4483E-04 PERCENT ERROR=-1.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
 R4-5 MANE 2.60 410.95 158.84 2.76 3.00 410.03 159.00 2.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2100E+02 EXCESS=0.0000E+00 OUTFLOW=0.2116E+02 BASIN STORAGE=0.3691E-04 PERCENT ERROR=-0.8

PhaseI_Basin.out

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R5-6	MANE	1.77	1321.25	168.17	2.39	3.00	1316.26	168.00	2.39
------	------	------	---------	--------	------	------	---------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1051E+03 EXCESS=0.0000E+00 OUTFLOW=0.1053E+03 BASIN STORAGE=0.6328E-01 PERCENT ERROR=-0.3

FOR STORM = 2 STORM AREA (SQ MI) = 10.00

R5-6	MANE	1.94	1236.19	169.97	2.28	3.00	1225.73	171.00	2.28
------	------	------	---------	--------	------	------	---------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1002E+03 EXCESS=0.0000E+00 OUTFLOW=0.1004E+03 BASIN STORAGE=0.6753E-01 PERCENT ERROR=-0.2

FOR STORM = 3 STORM AREA (SQ MI) = 20.00

R5-6	MANE	1.82	1180.28	168.70	2.20	3.00	1169.55	171.00	2.20
------	------	------	---------	--------	------	------	---------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9721E+02 EXCESS=0.0000E+00 OUTFLOW=0.9718E+02 BASIN STORAGE=0.6757E-01 PERCENT ERROR=0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R7-8	MANE	2.98	320.52	158.47	2.78	3.00	316.88	159.00	2.78
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1062E+02 EXCESS=0.0000E+00 OUTFLOW=0.1097E+02 BASIN STORAGE=0.1432E-03 PERCENT ERROR=-3.3

FOR STORM = 2 STORM AREA (SQ MI) = 10.00

R7-8	MANE	2.87	305.35	159.01	2.61	3.00	304.85	159.00	2.62
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1001E+02 EXCESS=0.0000E+00 OUTFLOW=0.1032E+02 BASIN STORAGE=0.1568E-03 PERCENT ERROR=-3.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00

R7-8	MANE	3.00	287.36	160.28	2.59	3.00	278.18	159.00	2.59
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9623E+01 EXCESS=0.0000E+00 OUTFLOW=0.1023E+02 BASIN STORAGE=0.1386E-03 PERCENT ERROR=-6.3

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R8-9	MANE	1.46	914.50	162.26	2.88	3.00	911.54	162.00	2.88
------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4580E+02 EXCESS=0.0000E+00 OUTFLOW=0.4583E+02 BASIN STORAGE=0.2113E-03 PERCENT ERROR=-0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
 R8-9 MANE 1.32 877.55 161.38 2.73 3.00 866.18 162.00 2.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4326E+02 EXCESS=0.0000E+00 OUTFLOW=0.4337E+02 BASIN STORAGE=0.2285E-03 PERCENT ERROR=-0.3

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
 R8-9 MANE 1.49 824.02 161.14 2.64 3.00 818.74 162.00 2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4190E+02 EXCESS=0.0000E+00 OUTFLOW=0.4192E+02 BASIN STORAGE=0.2053E-03 PERCENT ERROR=0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 BSNRT1 MANE 0.33 462.77 1107.64 2.65 3.00 462.77 1110.00 2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1038E+04 EXCESS=0.0000E+00 OUTFLOW=0.1037E+04 BASIN STORAGE=0.9252E-01 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
 BSNRT1 MANE 0.33 462.63 1107.74 2.64 3.00 462.63 1110.00 2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1035E+04 EXCESS=0.0000E+00 OUTFLOW=0.1035E+04 BASIN STORAGE=0.9241E-01 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
 BSNRT1 MANE 0.34 462.54 1107.73 2.64 3.00 462.54 1110.00 2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1033E+04 EXCESS=0.0000E+00 OUTFLOW=0.1033E+04 BASIN STORAGE=0.9237E-01 PERCENT ERROR=0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 BSNRT2 MANE 0.48 462.77 1110.07 2.65 3.00 462.77 1110.00 2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1038E+04 EXCESS=0.0000E+00 OUTFLOW=0.1037E+04 BASIN STORAGE=0.1054E+00 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
 BSNRT2 MANE 0.37 462.63 1110.22 2.64 3.00 462.63 1110.00 2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1035E+04 EXCESS=0.0000E+00 OUTFLOW=0.1035E+04 BASIN STORAGE=0.1056E+00 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00

BSNRT2	MANE	0.33	462.54	1110.65	2.64	3.00	462.54	1110.00	2.63
--------	------	------	--------	---------	------	------	--------	---------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1033E+04 EXCESS=0.0000E+00 OUTFLOW=0.1033E+04 BASIN STORAGE=0.1056E+00 PERCENT ERROR=0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R10-11	MANE	2.40	462.77	1113.47	2.64	3.00	462.77	1113.00	2.64
--------	------	------	--------	---------	------	------	--------	---------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1043E+04 EXCESS=0.0000E+00 OUTFLOW=0.1042E+04 BASIN STORAGE=0.1560E+01 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00

R10-11	MANE	2.40	462.63	1113.70	2.64	3.00	462.62	1116.00	2.64
--------	------	------	--------	---------	------	------	--------	---------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1040E+04 EXCESS=0.0000E+00 OUTFLOW=0.1039E+04 BASIN STORAGE=0.1557E+01 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00

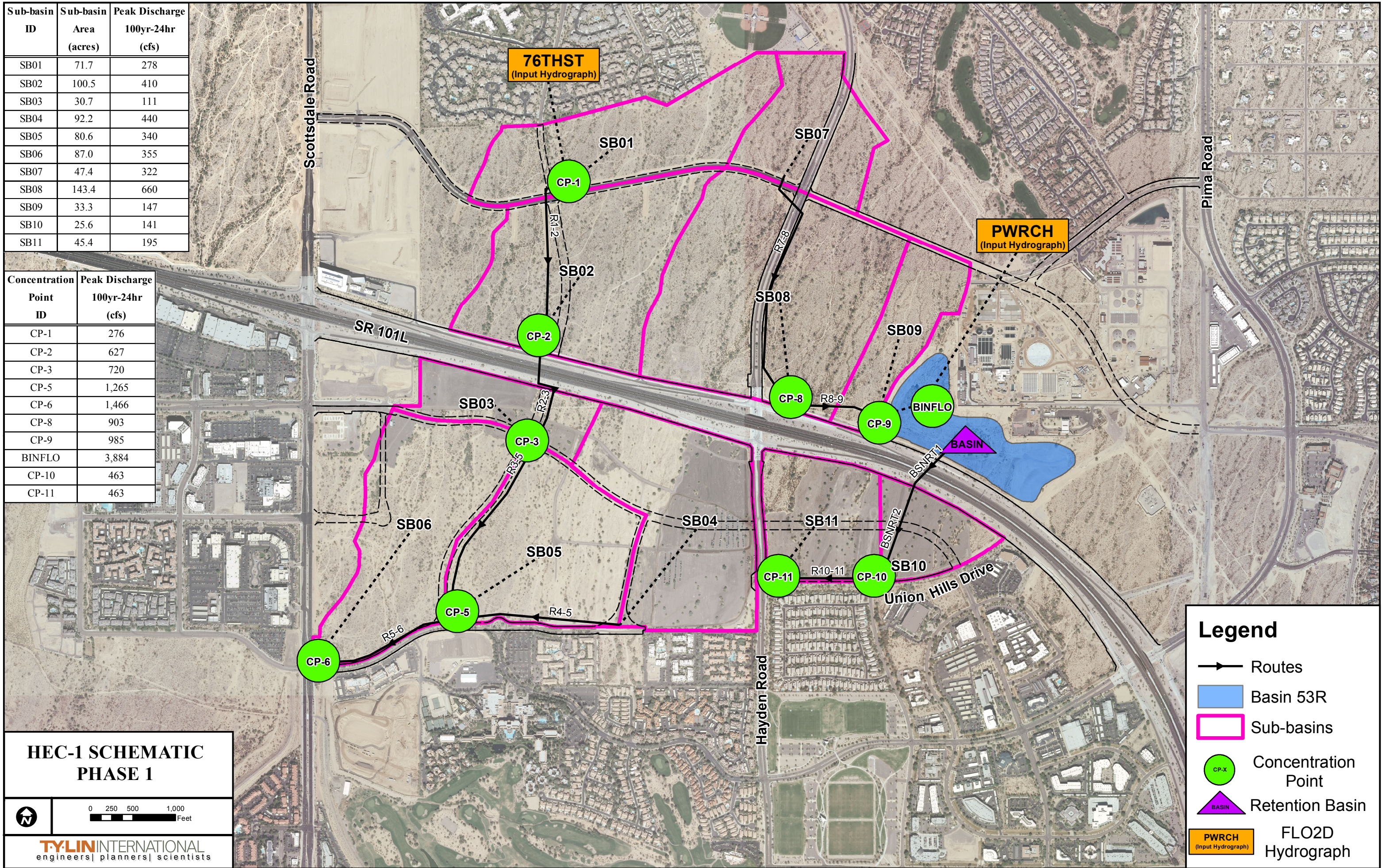
R10-11	MANE	2.47	462.54	1114.58	2.63	3.00	462.54	1113.00	2.63
--------	------	------	--------	---------	------	------	--------	---------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1038E+04 EXCESS=0.0000E+00 OUTFLOW=0.1037E+04 BASIN STORAGE=0.1559E+01 PERCENT ERROR=0.0

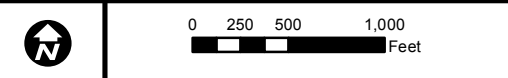
*** NORMAL END OF HEC-1 ***

Sub-basin ID	Sub-basin Area (acres)	Peak Discharge 100yr-24hr (cfs)
SB01	71.7	278
SB02	100.5	410
SB03	30.7	111
SB04	92.2	440
SB05	80.6	340
SB06	87.0	355
SB07	47.4	322
SB08	143.4	660
SB09	33.3	147
SB10	25.6	141
SB11	45.4	195

Concentration Point ID	Peak Discharge 100yr-24hr (cfs)
CP-1	276
CP-2	627
CP-3	720
CP-5	1,265
CP-6	1,466
CP-8	903
CP-9	985
BINFLO	3,884
CP-10	463
CP-11	463



**HEC-1 SCHEMATIC
PHASE 1**



TYLIN INTERNATIONAL
engineers | planners | scientists

Legend

- Routes
- Basin 53R
- Sub-basins
- CP-X Concentration Point
- BASIN Retention Basin
- PWRCH (Input Hydrograph) FLO2D Hydrograph


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1*****
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*
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*
* JUN 1998 *
*
* VERSION 4.1 *
*
* RUN DATE 12SEP14 TIME 11:47:04 *
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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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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

LINE	ID	1	2	3	4	5	6	7	8	9	10	
1	ID	CROSS ROADS EAST DRAINAGE ALTERNATIVES										
2	ID	RESERVOIR ROUTING OF BASIN N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ										
3	ID	INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:										
4	ID	100-YR, 6-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND										
5	ID	PIMA ROAD FLOWS)										
6	ID	PHASE 2 BASIN - SIDESLOPES STEEPENED FROM ~5:1 TO 3:1										
7	ID											
8	ID	PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14										
9	ID	MODELERS: RK, MW										
10	ID											
11	IT	3	0	0	1000							
12	IO	3										
	*DIAGRAM											
	*											
13	JD	2.755	0.0001									
14	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.074	
15	PC	0.087	0.099	0.118	0.138	0.216	0.377	0.834	0.911	0.931	0.950	
16	PC	0.962	0.972	0.983	0.991	1.000						
17	JD	2.738	0.5000									
18	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.074	
19	PC	0.087	0.099	0.118	0.138	0.216	0.377	0.834	0.911	0.931	0.950	
20	PC	0.962	0.972	0.983	0.991	1.000						
21	JD	2.686	2.8									
22	PC	0.000	0.009	0.016	0.025	0.034	0.042	0.051	0.059	0.068	0.077	
23	PC	0.088	0.101	0.121	0.164	0.253	0.451	0.694	0.836	0.900	0.938	
24	PC	0.950	0.963	0.975	0.988	1.000						
25	JD	2.540	16.0									
26	PC	0.000	0.015	0.020	0.030	0.048	0.063	0.076	0.090	0.105	0.119	
27	PC	0.135	0.152	0.175	0.222	0.304	0.472	0.670	0.796	0.868	0.912	
28	PC	0.946	0.960	0.973	0.987	1.000						
29	JD	2.232	90.0									
30	PC	0.000	0.021	0.035	0.051	0.071	0.087	0.105	0.125	0.143	0.160	
31	PC	0.179	0.201	0.232	0.281	0.364	0.500	0.658	0.773	0.841	0.888	
32	PC	0.927	0.945	0.964	0.982	1.000						
	*											
33	KK	76THST										
34	KM	76TH STREET CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS										
35	KM	100-YR, 6-HR FLO-2D MODEL (XS 98)										
36	BA	0.24										
37	QI	0	0	0	0	0	0	0	0	0	0	
38	QI	0	0	0	0	0	0	0	0	0	0	
39	QI	0	0	0	0	0	0	0	0	0	0	
40	QI	0	0	0	0	0	0	0	0	0	0	
41	QI	0	0	0	0	0	0	0	0	0	0	
42	QI	0	0	0.01	0	0	0	0	0	0	0	
43	QI	0.01	0	0	0.01	0.01	0.01	0.02	0.03	0.05	0.07	

		Onsite_6hr.out									
44	QI	0.09	0.16	0.27	0.42	0.63	0.9	2.34	3.89	7.48	10.26
45	QI	12.7	14.07	17.67	27.43	38.25	42.26	42.56	42.35	43.77	48.39
46	QI	49.92	51.19	50.98	50.52	49.38	48.6	44.64	42.62	39.72	36.96
47	QI	34.49	32.83	31.02	29.6	28.15	26.72	25.66	24.48	23.53	22.56
48	QI	21.55	20.83	19.46	20.34	18.32	17.51	16.55	16.22	15.59	15.15
49	QI	14.81	14.23	13.72	13.18	13.21	12.84	12.36	12.34	12.16	12
50	QI	11.63	11.31	11.37	11.23	11.13	10.56	10.63	10.27	9.98	9.86
51	QI	9.58	9.02	9.34	8.67	8.51	8.32	8.08	7.75	7.43	7.37

1

HEC-1 INPUT

PAGE 2

LINE	ID	1	2	3	4	5	6	7	8	9	10
52	QI	7.29	7.19	7.08	7	6.89	6.73	6.55	6.4	6.23	6.02
53	QI	5.83	5.66	5.06	4.57	4.75	4.76	4.65	4.55	4.44	4.32
54	QI	4.23	4.15	4.05	3.95	3.87	3.81	3.68	3.54	3.48	3.42
55	QI	3.4	2.42	2.38	3.4	3.61	3.55	3.49	2.89	2.36	2.36
56	QI	2.36	2.37	2.44	3.67	2.44	2.51	2.49	2.47	2.42	2.37
57	QI	2.32	2.29	2.26	2.23	2.19	2.16	2.13	2.1	2.07	2.05
58	QI	2.02	1.99	1.96	1.91	1.86	1.83	1.78	1.69	1.58	1.54
59	QI	1.58	1.65	1.69	1.67	1.59	1.5	1.36	1.41	1.51	1.54
60	QI	1.52	1.35	1.43	1.37	1.25	1.21	1.2	1.2	1.23	1.28
61	QI	1.31	1.34	1.35	1.35	1.34	1.34	1.33	1.33	1.26	1.09
62	QI	1.09	1.11	1.16	1.22	1.06	1.07	1.15	1.06	1.05	1.05
63	QI	1.04	1.02	1.01	1	0.98	0.97	0.96	0.95	0.94	0.92
64	QI	0.91	0.9	0.89	0.88	0.87	0.86	0.85	0.85	0.84	0.84
65	QI	0.83	0.82	0.81	0.8	0.79	0.79	0.78	0.77	0.77	0.76
66	QI	0.76	0.75	0.74	0.74	0.73	0.72	0.71	0.71	0.7	0.69
67	QI	0.69	0.68	0.68	0.67	0.67	0.67	0.66	0.66	0.65	0.65
68	QI	0.65	0.64	0.64	0.63	0.63	0.62	0.62	0.62	0.61	0.61
69	QI	0.6	0.6	0.59	0.59	0.58	0.58	0.57	0.57	0.56	0.56
70	QI	0.55	0.55	0.54	0.54	0.54	0.53	0.53	0.52	0.52	0.52
71	QI	0.51	0.51	0.5	0.5	0.5	0.49	0.49	0.48	0.48	0.48
72	QI	0.47	0.47	0.46	0.46	0.46	0.45	0.45	0.45	0.44	0.44
73	QI	0.44									
	*										
74	KK	SB01	BASIN								
75	BA	0.112									
76	LG	0.25	0.25	4.10	0.55	45					
77	UC	0.317	0.252								
78	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
79	UA	100									
	*										
80	KK	CP-1	COMBINE								
81	KM		LEGACY BLVD AND 76TH ST (MILLER RD CHANNEL)								
82	HC	2									
	*										
83	KK	R1-2	ROUTE								
84	KM		MILLER RD CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY								
85	RK	2104	0.0015	0.03		TRAP	66	4			
	*										
86	KK	SB02	BASIN								
87	BA	0.157									
88	LG	0.15	0.25	4.15	0.58	56					
89	UC	0.324	0.237								
90	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
91	UA	100									
	*										

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HEC-1 INPUT

PAGE 3

LINE	ID	1	2	3	4	5	6	7	8	9	10
92	KK	CP-2	COMBINE								
93	KM		SR 101L FREEWAY AND 76TH ST (MILLER RD CHANNEL)								
94	HC	2									
	*										
95	KK	R2-3	ROUTE								
96	KM		MILLER RD CHANNEL FROM SR 101L FREEWAY TO MAYO BLVD								
97	RK	1260	0.0015	0.03		TRAP	92	4			
	*										
98	KK	SB03	BASIN								
99	BA	0.048									
100	LG	0.15	0.25	4.50	0.47	55					
101	UC	0.360	0.290								
102	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
103	UA	100									
	*										
104	KK	CP-3	COMBINE								
105	KM		MAYO BLVD AND 76TH ST (MILLER RD CHANNEL)								
106	HC	2									
	*										
107	KK	R3-5	ROUTE								
108	KM		MILLER RD CHANNEL FROM MAYO BLVD TO PRINCESS BLVD								
109	RK	2396	0.0015	0.03		TRAP	98	4			
	*										

Onsite_6hr.out

110	KK	SB04	BASIN								
111	BA	0.144									
112	LG	0.14	0.25	4.60	0.44	61					
113	UC	0.301	0.196								
114	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
115	UA	100									
	*										

116	KK	R4-5	ROUTE								
117	KM	PRINCESS BLVD CHANNEL FROM 77TH ST TO 76TH ST									
118	RK	2005	0.0013	0.03			TRAP	39	4		
	*										

119	KK	SB05	BASIN								
120	BA	0.126									
121	LG	0.22	0.25	4.50	0.44	48					
122	UC	0.326	0.224								
123	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
124	UA	100									
	*										

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HEC-1 INPUT

PAGE 4

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

125	KK	CP-5	COMBINE								
126	KM	PRINCESS BLVD AND 76TH ST (PRINCESS BLVD CHANNEL)									
127	HC	3									
	*										

128	KK	R5-6	ROUTE								
129	KM	PRINCESS BLVD CHANNEL FROM 76TH ST TO SCOTTSDALE RD									
130	RK	1550	0.0015	0.03			TRAP	188	4		
	*										

131	KK	SB06	BASIN								
132	BA	0.136									
133	LG	0.16	0.25	4.55	0.45	53					
134	UC	0.318	0.243								
135	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
136	UA	100									
	*										

137	KK	CP-6	COMBINE								
138	KM	PRINCESS BLVD AND SCOTTSDALE RD (PRINCESS BLVD CHANNEL)									
139	HC	2									
	*										

140	KK	SB07	BASIN								
141	BA	0.074									
142	LG	0.21	0.25	4.00	0.58	49					
143	UC	0.204	0.113								
144	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
145	UA	100									
	*										

146	KK	R7-8	ROUTE								
147	KM	HAYDEN ROAD NORTH CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY									
148	RK	2778	0.0014	0.03			TRAP	46	4		
	*										

149	KK	SB08	BASIN								
150	BA	0.224									
151	LG	0.14	0.25	4.10	0.59	59					
152	UC	0.333	0.193								
153	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
154	UA	100									
	*										

155	KK	CP-8	COMBINE								
156	KM	SR 101L FREEWAY AND HAYDEN ROAD (HAYDEN ROAD NORTH CHANNEL)									
157	HC	2									
	*										

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HEC-1 INPUT

PAGE 5

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

158	KK	R8-9	ROUTE								
159	KM	HAYDEN ROAD NORTH CHANNEL FROM HAYDEN ROAD TO BASIN 53R									
160	RK	1250	0.0013	0.03			TRAP	67	4		
	*										

161	KK	SB09	BASIN								
162	BA	0.052									
163	LG	0.15	0.25	4.00	0.61	55					
164	UC	0.251	0.227								
165	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
166	UA	100									
	*										

167	KK	CP-9	COMBINE								
168	KM	SR 101L FREEWAY AND BASIN 53R (HAYDEN ROAD NORTH CHANNEL)									
169	HC	2									
	*										

*

LINE	ID	1	2	3	4	5	6	7	8	9	10	
170	KK	PIMACH										
171	KM	PIMA ROAD CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS										
172	KM	100-YR, 6-HR FLO-2D MODEL (XS 183)										
173	BA	12.3										
174	QI	0	0	0	0	0	0	0	0	0	0	
175	QI	0	0	0	0	0	0	0	0	0	0	
176	QI	0	0	0	0	0	0	0	0	0	0	
177	QI	0	0	0	0	0	0	0	0	0	0	
178	QI	0	0	0	0	0	0	0	0	0	0	
179	QI	0	0	0	0	0	0	0	0	0	0	
180	QI	0	0	0	0	0	0	0.01	0.01	0.01	0.01	
181	QI	0.02	0.06	0.12	0.19	0.29	0.43	1.62	3.73	6.28	13.12	
182	QI	19.17	18.99	20.23	23.44	37.1	65.6	118.28	536.07	740.49	784.96	
183	QI	795.73	792.08	785.39	784.16	826.86	835.79	839.66	856.83	890.85	1074.56	
184	QI	1522.8	1924.46	2612.09	2761.62	3125.86	3450.94	3565.35	3786.18	3953.42	4005.23	
185	QI	4017.2	3956.42	3828.66	3704.96	3584.74	3457.47	3327.91	3209.52	3068.2	2902.83	
186	QI	2698.1	2519.92	2353.91	2218.47	2091.25	1970.95	1868.74	1749.96	1656.67	1564.23	
187	QI	1473.2	1392.42	1326.33	1253.44	1190.18	1121.44	1068.33	1012.4	961.04	907.15	
188	QI	859	817.16	777.05	741.05	708.67	676.64	650.15	620	595.68	569.46	
189	QI	552.9	528.08	508.87	488.92	471.15	456.27	440.43	424.35	410.65	396.26	
190	QI	384.05	374.5	363.39	351.31	341.86	332.93	325.13	317.66	308.91	300.01	
191	QI	291.96	282.64	276.3	270.44	264.03	257.52	251.57	244.49	238.62	232.96	
192	QI	227.38	223.46	217.91	210.73	207.24	202.22	197.15	192.34	189.04	184.57	
193	QI	178.93	173.7	170.95	166.9	162.57	158.97	155.56	151.97	149.46	146.92	
194	QI	143.8	141.62	138.05	136.38	130.4	128.32	123.98	120.84	117.3	114.09	
195	QI	113.28	110.56	108.01	104.98	103.24	100.82	98.69	97.77	95.8	93.56	
196	QI	92.8	91.19	88.35	86.44	84.49	82.18	80.7	78.31	76.07	74.85	
197	QI	73.81	73.17	71.94	70.66	69.66	69.54	67.38	67.61	65.17	62.74	
198	QI	61.41	60.29	61.36	59.06	56.97	56.32	55.01	53.88	52.91	52.23	
199	QI	52.11	50.68	50.15	49.6	48.36	47.6	46.82	46.4	45.54	44.69	
200	QI	43.67	43.34	42.77	41.9	41.04	40.86	40.39	39.72	38.49	38.26	
201	QI	37.01	36.83	36.64	35.35	35.64	34.94	35.17	33.9	33.7	33.71	
202	QI	33.78	32.55	32.35	31.97	31.61	31.38	31.21	30.84	30.41	30	
203	QI	29.61	29.27	28.72	28.17	27.62	27.26	26.95	26.26	25.93	25.66	
204	QI	25.7	25.62	25.7	25.39	24.94	24.57	24.28	23.92	23.55	22.97	
205	QI	22.7	22.79	22.23	21.94	21.87	21.6	21.3	21.18	21.05	20.75	

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LINE	ID	1	2	3	4	5	6	7	8	9	10
206	QI	20.64	20.4	20.19	19.93	19.9	19.01	18.72	18.7	18.37	18.27
207	QI	18.1	18.05	17.3	17.39	17.27	17.09	16.86	16.81	16.73	16.6
208	QI	16.55	16.33	16.05	15.82	15.63	15.43	15.38	15.42	15.17	14.98
209	QI	14.82	14.78	14.76	14.57	14.24	14.01	13.85	13.94	13.77	13.77
210	QI	12.6									

*

LINE	ID	1	2	3	4	5	6	7	8	9	10	
211	KK	PIMAIN										
212	KM	BYPASS ALONG SE SIDE OF BASIN 53R TO ADOT CULVERT NEAR UNION HILLS DR										
213	DT	PIMABY										
214	DI	0	1000	10000								
215	DQ	0	1000	10000								

*

LINE	ID	1	2	3	4	5	6	7	8	9	10	
216	KK	PWRCH										
217	KM	POWERLINE CHANNEL HYDROGRAPH FROM FLO-2D										
218	KM	100-YR, 6-HR FLO-2D MODEL (XS 107)										
219	BA	7.0										
220	QI	0	0	0	0	0	0	0	0	0	0	
221	QI	0	0	0	0	0	0	0	0	0	0	
222	QI	0	0	0	0	0	0	0	0	0	0	
223	QI	0	0	0	0	0	0	0	0	0	0	
224	QI	0	0	0	0	0	0	0	0	0	0	
225	QI	0	0	0	0	0	0	0	0	0	0	
226	QI	0	0	0	0	0	0	0	0	0	0	
227	QI	0	0	0.03	0.05	0.08	0.11	0.58	1.13	1.62	2.35	
228	QI	17.74	24.61	32.43	41.1	46	50.91	131.64	355.54	399.7	422.85	
229	QI	433.53	433.73	422.44	409.12	397.71	391.08	388.91	381.3	371.02	361.84	
230	QI	359.13	372.83	390.54	400.38	398.98	391.64	390.01	419.65	505.31	577.51	
231	QI	616.52	654.6	689.73	713.7	727.81	737.85	739.81	733.87	725.12	714.86	
232	QI	699.64	690.12	677.33	666.62	655.55	645.41	637.05	633.81	630.71	627.88	
233	QI	621.52	616.56	611.87	606.82	603.07	599.48	598.68	597.46	596.17	595.28	
234	QI	594.12	590.26	586.44	582.19	576.08	570.84	564.08	555.83	546.74	537.07	
235	QI	525.86	516.15	505.83	495.17	484.12	472.45	462.13	451.31	441.83	429.35	
236	QI	419.09	410.42	401.94	394.3	384.43	375.56	366.51	358.68	350.24	342.9	
237	QI	335	326.95	320.66	313.52	306.21	299.42	294.88	279.13	274.41	272.37	
238	QI	270.9	258.49	256.83	252.87	239.19	235.68	236.09	226.97	221.44	220.04	
239	QI	211.13	213.73	201.19	203.88	194.6	196.81	183.61	188.47	178.11	181.39	
240	QI	172.83	170.18	168.28	163.33	169.45	155.83	153.79	154.42	148.45	145.47	
241	QI	146.04	140.33	138.63	140.19	133.49	130.23	135.24	122.64	121.61	121.05	
242	QI	120.9	117.47	115.13	113.28	116.6	110.32	107.03	105.71	109.02	101.22	
243	QI	99.25	97.86	99.48	103.28	92.95	90.9	89.54	87.83	91.59	84.19	
244	QI	82.93	81.6	80.75	79.42	82.41	77.68	75.61	74.44	74.51	72.29	
245	QI	79.3	70.93	70.15	69.48	68.44	67.58	66.72	72.25	65.21	64.67	
246	QI	63.5	62.83	62.6	62.06	61.31	64.86	60.25	59.05	58.48	55.87	
247	QI	56.01	55.72	54.8	54.06	53.38	51.64	51.71	50.75	49.83	49.2	
248	QI	48.75	46.82	45.85	45.55	47.8	43.99	43.77	43.28	42.64	42.31	
249	QI	42.04	41.65	41.41	40.69	40.3	40.09	39.93	39.53	42.18	38.64	
250	QI	37.99	37.44	37.13	36.96	36.8	36.19	35.56	35.28	34.71	33.9	
251	QI	33.42	33.14	32.73	39.25	32.39	31.56	30.95	30.66	30.3	30	
252	QI	29.22	28.72	29.47	28.39	28.32	28.13	28.24	28.22	27.67	27.34	
253	QI	27.15	27.03	26.51	25.94	25.77	31.57	25.38	25.06	25.04	24.52	

		Onsite_6hr.out									
254	QI	24.31	24.43	24.27	23.35	23.93	23.1	22.66	22.71	22.57	22.79
255	QI	22.09	21.91	21.94	21.84	21.71	21.66	21.87	21.85	21.36	21.06
256	QI	20.95									

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HEC-1 INPUT

PAGE 7

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

257 KK BINFLO
 258 KM TOTAL INFLOW INTO BASIN 53R.
 259 HC 3
 *

260 KK BASIN
 261 KM BASIN STAGE/STORAGE FROM PROPOSED CONTOURS BETWEEN
 262 KM ELEV 1594 AND 1615; BASIN SIDE SLOPES STEEPENED TO 3:1
 263 KM OUTFLOW RATING CURVE FROM CULVERTMASTER FOR 2-60" PIPES
 264 KM THE OUTLET PIPES ARE INLET CONTROLLED.
 265 RS 1 STOR 0
 266 SV 0 44.9 76.8 108.7 140.6 171.5 202.5 233.5 264.5 295.5
 267 SV 328.7 362.0 395.2 428.5 461.7 497.2 532.7 568.3 603.8 639.3
 268 SE 1594 1597 1598 1599 1600 1601 1602 1603 1604 1605
 269 SE 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615
 270 SQ 0 94.6 153.4 209.8 244.2 264.5 284.0 302.5 320.1 336.9
 271 SQ 353.0 368.5 383.5 398.0 412.0 425.7 438.9 451.9 464.5 476.8
 *

272 KK BSNRT1
 273 KM 2-60" CMP OULFLOW PIPES FOR BASIN 53R UNDER SR 101L FREEWAY.
 274 KM DOWNSTREAM CONNECTING PIPES ARE 60-INCH RCP AND WILL HAVE
 275 KM EXCESS CAPACITY.
 276 RK 550 0.0052 0.024 CIRC 7.0
 *

277 KK BSNRT2
 278 KM 2-60" RCP PIPES FROM SR 101L FREEWAY TO UNION HILLS DR (BASIN 53R OUTFAL
 279 RK 1200 0.0077 0.013 CIRC 7.0
 *

280 KK PIMABY
 281 KM RETRIEVE PIMA BYPASS CHANNEL HYDROGRAPH
 282 DR PIMABY
 *

283 KK PMB-RT
 284 KM UNION HILLS DR CHANNEL FROM SR 101L FREEWAY TO 82ND ST
 285 RK 3157 0.0082 0.013 0 TRAP 24 4
 *

286 KK SB10 BASIN
 287 BA 0.040
 288 LG 0.15 0.25 4.25 0.55 55
 289 UC 0.230 0.159
 290 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 291 UA 100
 *

1

HEC-1 INPUT

PAGE 8

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

292 KK CP-10 COMBINE
 293 KM UNION HILLS DR AND 82ND ST (UNION HILLS DR CHANNEL)
 294 HC 3
 *

295 KK R10-11 ROUTE
 296 KM UNION HILLS DR CHANNEL FROM 82ND ST TO HAYDEN ROAD
 297 RK 1277 0.0014 0.03 TRAP 220 4
 *

298 KK SB11 BASIN
 299 BA 0.071
 300 LG 0.15 0.25 4.15 0.58 55
 301 UC 0.292 0.229
 302 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 303 UA 100
 *

304 KK CP-11 COMBINE
 305 KM UNION HILLS DR AND HAYDEN ROAD (HAYDEN RD SOUTH CHANNEL)
 306 HC 2
 *
 307 ZZ

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE (V) ROUTING (--->) DIVERSION OR PUMP FLOW
 NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW
 33 76THST

```
74      .          SB01
      .          .
      .          .
80      CP-1.....
      V
      V
83      R1-2
      .
      .
86      .          SB02
      .          .
      .          .
92      CP-2.....
      V
      V
95      R2-3
      .
      .
98      .          SB03
      .          .
      .          .
104     CP-3.....
      V
      V
107     R3-5
      .
      .
110     .          SB04
      .          V
      .          V
116     .          R4-5
      .          .
      .          .
119     .          .          SB05
      .          .          .
      .          .          .
125     CP-5.....
      V
      V
128     R5-6
      .
      .
131     .          SB06
      .          .
      .          .
137     CP-6.....
      .
      .
140     .          SB07
      .          V
      .          V
146     .          R7-8
      .          .
      .          .
149     .          .          SB08
      .          .          .
      .          .          .
155     .          CP-8.....
      .          V
      .          V
158     .          R8-9
      .          .
      .          .
161     .          .          SB09
      .          .          .
      .          .          .
167     .          CP-9.....
      .          .
      .          .
170     .          .          PIMACH
      .          .          .
      .          .          .
213     .          .          .-----> PIMABY
211     .          .          PIMAIN
      .          .          .
      .          .          .
216     .          .          .          PWRCH
      .          .          .          .
      .          .          .          .
257     .          BINFLO.....
      .          V
      .          V
260     .          BASIN
      .          V
      .          V
272     .          BSNRT1
      .          V
      .          V
277     .          BSNRT2
      .          .
      .          .
      .          .
282     .          .          .-----< PIMABY
280     .          .          PIMABY
```


				Onsite_6hr.out						
	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	0.01	0.02	0.02	0.08	0.16	0.46	0.08	0.02	0.02	0.01
	0.01	0.01	0.01	0.01						

21 JD INDEX STORM NO. 3
 STRM 2.69 PRECIPITATION DEPTH
 TRDA 2.80 TRANSPOSITION DRAINAGE AREA

22 PI PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.02	0.04	0.09	0.20	0.24	0.14	0.06	0.04	0.01
0.01	0.01	0.01	0.01						

25 JD INDEX STORM NO. 4
 STRM 2.54 PRECIPITATION DEPTH
 TRDA 16.00 TRANSPOSITION DRAINAGE AREA

26 PI PRECIPITATION PATTERN

0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.02
0.02	0.02	0.05	0.08	0.17	0.20	0.13	0.07	0.04	0.03
0.01	0.01	0.01	0.01						

29 JD INDEX STORM NO. 5
 STRM 2.23 PRECIPITATION DEPTH
 TRDA 90.00 TRANSPOSITION DRAINAGE AREA

30 PI PRECIPITATION PATTERN

0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.03	0.05	0.08	0.14	0.16	0.12	0.07	0.05	0.04
0.02	0.02	0.02	0.02						

*** **

33 KK 76THST

76TH STREET CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS
 100-YR, 6-HR FLO-2D MODEL (XS 98)

SUBBASIN RUNOFF DATA

36 BA SUBBASIN CHARACTERISTICS
 TAREA 0.24 SUBBASIN AREA

*** **

HYDROGRAPH AT STATION 76THST
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			49.95-HR
		6-HR	24-HR	72-HR	
51.	4.55	15.	4.	2.	2.
		(INCHES) 0.582	0.664	0.728	0.728
		(AC-FT) 7.	9.	9.	9.
CUMULATIVE AREA =		0.24 SQ MI			

*** **

HYDROGRAPH AT STATION 76THST
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			49.95-HR
		6-HR	24-HR	72-HR	
51.	4.55	15.	4.	2.	2.
		(INCHES) 0.582	0.664	0.728	0.728
		(AC-FT) 7.	9.	9.	9.
CUMULATIVE AREA =		0.24 SQ MI			

*** **

HYDROGRAPH AT STATION 76THST
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			49.95-HR
		6-HR	24-HR	72-HR	
51.	4.55	15.	4.	2.	2.

Onsite_6hr.out

(INCHES)	0.582	0.664	0.728	0.728
(AC-FT)	7.	9.	9.	9.

CUMULATIVE AREA = 0.24 SQ MI

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

HYDROGRAPH AT STATION 76THST
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
+		(CFS)			
+	51.	4.55	15.	4.	2.
		(INCHES)	0.582	0.664	0.728
		(AC-FT)	7.	9.	9.

CUMULATIVE AREA = 0.24 SQ MI

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

HYDROGRAPH AT STATION 76THST
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
+		(CFS)			
+	51.	4.55	15.	4.	2.
		(INCHES)	0.582	0.664	0.728
		(AC-FT)	7.	9.	9.

CUMULATIVE AREA = 0.24 SQ MI

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

INTERPOLATED HYDROGRAPH AT 76THST

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
+		(CFS)			
+	51.	4.55	15.	4.	2.
		(INCHES)	0.582	0.664	0.728
		(AC-FT)	7.	9.	9.

CUMULATIVE AREA = 0.24 SQ MI

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*          *
74 KK *    SB01 *    BASIN
*          *
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SUBBASIN RUNOFF DATA

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75 BA    SUBBASIN CHARACTERISTICS
        TAREA    0.11  SUBBASIN AREA

76 LG    GREEN AND AMPT LOSS RATE
        STRTL    0.25  STARTING LOSS
        DTH      0.25  MOISTURE DEFICIT
        PSIF     4.10  WETTING FRONT SUCTION
        XKSAT    0.55  HYDRAULIC CONDUCTIVITY
        RTIMP    45.00 PERCENT IMPERVIOUS AREA

77 UC    CLARK UNITGRAPH
        TC       0.32  TIME OF CONCENTRATION
        R        0.25  STORAGE COEFFICIENT

78 UA    ACCUMULATED-AREA VS. TIME, 11 ORDINATES
        0.0      5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
        100.0

```

UNIT HYDROGRAPH PARAMETERS
CLARK TC= 0.32 HR, R= 0.25 HR
SNYDER TP= 0.19 HR, CP= 0.47

UNIT HYDROGRAPH
30 END-OF-PERIOD ORDINATES

					Onsite_6hr.out				
15.	58.	129.	172.	167.	153.	134.	112.	91.	75.
61.	50.	41.	34.	28.	23.	19.	15.	12.	10.
8.	7.	6.	5.	4.	3.	3.	2.	2.	1.

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

HYDROGRAPH AT STATION SB01
 TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.59, TOTAL EXCESS = 2.17

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		49.95-HR
+	326.	0.95	26.	7.	3.
			(INCHES)	2.159	2.159
			(AC-FT)	13.	13.

CUMULATIVE AREA = 0.11 SQ MI

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

HYDROGRAPH AT STATION SB01
 TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.59, TOTAL EXCESS = 2.15

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		49.95-HR
+	323.	0.95	26.	6.	3.
			(INCHES)	2.143	2.143
			(AC-FT)	13.	13.

CUMULATIVE AREA = 0.11 SQ MI

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

HYDROGRAPH AT STATION SB01
 TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.63, TOTAL EXCESS = 2.05

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		49.95-HR
+	287.	1.00	25.	6.	3.
			(INCHES)	2.044	2.044
			(AC-FT)	12.	12.

CUMULATIVE AREA = 0.11 SQ MI

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

HYDROGRAPH AT STATION SB01
 TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.68, TOTAL EXCESS = 1.86

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		49.95-HR
+	241.	1.00	22.	6.	3.
			(INCHES)	1.850	1.850
			(AC-FT)	11.	11.

CUMULATIVE AREA = 0.11 SQ MI

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

HYDROGRAPH AT STATION SB01
 TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.72, TOTAL EXCESS = 1.52

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		49.95-HR
+	182.	1.00	18.	5.	2.
			(INCHES)	1.510	1.510
			(AC-FT)	9.	9.

CUMULATIVE AREA = 0.11 SQ MI

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

INTERPOLATED HYDROGRAPH AT SB01

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
324.	0.95	26.	6.	3.	3.
		(INCHES) 2.146	2.146	2.146	2.146
		(AC-FT) 13.	13.	13.	13.
CUMULATIVE AREA =		0.11 SQ MI			

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80 KK CP-1 COMBINE
 LEGACY BLVD AND 76TH ST (MILLER RD CHANNEL)

82 HC HYDROGRAPH COMBINATION
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
326.	0.95	37.	11.	5.	5.
		(INCHES) 0.987	1.133	1.183	1.183
		(AC-FT) 19.	21.	22.	22.
CUMULATIVE AREA =		0.35 SQ MI			

*** **

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
323.	0.95	37.	11.	5.	5.
		(INCHES) 0.982	1.128	1.178	1.178
		(AC-FT) 18.	21.	22.	22.
CUMULATIVE AREA =		0.35 SQ MI			

*** **

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
287.	1.00	36.	10.	5.	5.
		(INCHES) 0.951	1.096	1.147	1.147
		(AC-FT) 18.	21.	22.	22.
CUMULATIVE AREA =		0.35 SQ MI			

*** **

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
241.	1.00	34.	10.	5.	5.
		(INCHES) 0.886	1.035	1.085	1.085
		(AC-FT) 17.	19.	20.	20.

CUMULATIVE AREA = 0.35 SQ MI

*** **

HYDROGRAPH AT STATION CP-1
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
182.	1.00	29.	9.	4.	4.
		(INCHES) 0.776	0.927	0.977	0.977
		(AC-FT) 15.	17.	18.	18.

CUMULATIVE AREA = 0.35 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT CP-1

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
323.	0.95	37.	11.	5.	5.
		(INCHES) 0.982	1.128	1.178	1.178
		(AC-FT) 18.	21.	22.	22.

CUMULATIVE AREA = 0.35 SQ MI

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83 KK *****
* R1-2 * ROUTE
* *

MILLER RD CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY

HYDROGRAPH ROUTING DATA

85 RK KINEMATIC WAVE STREAM ROUTING

L	2104.	CHANNEL LENGTH
S	0.0015	SLOPE
N	0.030	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	66.00	BOTTOM WIDTH OR DIAMETER
Z	4.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.17	1.56	3.00	701.33	324.42	63.63	1.19	3.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2221E+02 EXCESS=0.0000E+00 OUTFLOW=0.2234E+02 BASIN STORAGE=0.5560E-01 PERCENT ERROR=-0.8

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.17	1.56	3.00	317.42	66.00	1.19
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HYDROGRAPH AT STATION R1-2
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
317.	1.10	38.	11.	5.	5.
		(INCHES) 0.995	1.140	1.189	1.189
		(AC-FT) 19.	21.	22.	22.

CUMULATIVE AREA = 0.35 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.17	1.56	3.00	701.33	321.94	63.70	1.18	3.88

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2212E+02 EXCESS=0.0000E+00 OUTFLOW=0.2223E+02 BASIN STORAGE=0.5936E-01 PERCENT ERROR=-0.8

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.17	1.56	3.00	314.95	66.00	1.18
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HYDROGRAPH AT STATION R1-2
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
315.	1.10	37. (INCHES) 0.988 (AC-FT) 19.	11. 1.134 21.	5. 1.184 22.	5. 1.184 22.

CUMULATIVE AREA = 0.35 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.17	1.56	3.00	701.33	281.88	67.46	1.15	3.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2153E+02 EXCESS=0.0000E+00 OUTFLOW=0.2160E+02 BASIN STORAGE=0.5560E-01 PERCENT ERROR=-0.6

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.17	1.56	3.00	280.31	66.00	1.15
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HYDROGRAPH AT STATION R1-2
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
280.	1.10	36. (INCHES) 0.955 (AC-FT) 18.	10. 1.100 21.	5. 1.149 22.	5. 1.149 22.

CUMULATIVE AREA = 0.35 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.17	1.56	3.00	701.33	239.43	66.99	1.09	3.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2036E+02 EXCESS=0.0000E+00 OUTFLOW=0.2044E+02 BASIN STORAGE=0.5560E-01 PERCENT ERROR=-0.7

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.17	1.56	3.00	234.05	69.00	1.09
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HYDROGRAPH AT STATION R1-2
TRANSPPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
234.	1.15	34.	10.	5.	5.
		(INCHES) 0.887	1.038	1.087	1.087
		(AC-FT) 17.	19.	20.	20.

CUMULATIVE AREA = 0.35 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.17	1.56	2.91	526.00	179.26	70.19	0.98	3.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1834E+02 EXCESS=0.0000E+00 OUTFLOW=0.1842E+02 BASIN STORAGE=0.6416E-01 PERCENT ERROR=-0.8

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.17	1.56	3.00	178.38	69.00	0.98
***	***	***	***	***		

HYDROGRAPH AT STATION R1-2
TRANSPPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
178.	1.15	30.	9.	4.	4.
		(INCHES) 0.780	0.932	0.981	0.981
		(AC-FT) 15.	17.	18.	18.

CUMULATIVE AREA = 0.35 SQ MI

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

INTERPOLATED HYDROGRAPH AT R1-2

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
315.	1.10	37.	11.	5.	5.
		(INCHES) 0.989	1.134	1.184	1.184
		(AC-FT) 19.	21.	22.	22.

CUMULATIVE AREA = 0.35 SQ MI

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86 KK * SB02 * BASIN
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SUBBASIN RUNOFF DATA

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87 BA SUBBASIN CHARACTERISTICS
TAREA 0.16 SUBBASIN AREA

88 LG GREEN AND AMPT LOSS RATE
STRTL 0.15 STARTING LOSS
DTH 0.25 MOISTURE DEFICIT
PSIF 4.15 WETTING FRONT SUCTION
XKSAT 0.58 HYDRAULIC CONDUCTIVITY
RTIMP 56.00 PERCENT IMPERVIOUS AREA

89 UC CLARK UNITGRAPH
TC 0.32 TIME OF CONCENTRATION
R 0.24 STORAGE COEFFICIENT

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90 UA Onsite_6hr.out
 ACCUMULATED-AREA VS. TIME, 11 ORDINATES
 0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 100.0

UNIT HYDROGRAPH PARAMETERS
 CLARK TC= 0.32 HR, R= 0.24 HR
 SNYDER TP= 0.19 HR, CP= 0.49

UNIT HYDROGRAPH
 28 END-OF-PERIOD ORDINATES
 21. 81. 185. 250. 242. 220. 192. 160. 129. 104.
 85. 68. 55. 45. 36. 29. 24. 19. 16. 13.
 10. 8. 7. 5. 4. 4. 3. 2.

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HYDROGRAPH AT STATION SB02
 TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.45, TOTAL EXCESS = 2.30

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)				
+ 492.	0.95	39.	10.	5.	5.	
		(INCHES)	2.292	2.292	2.292	2.292
		(AC-FT)	19.	19.	19.	19.

CUMULATIVE AREA = 0.16 SQ MI

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

HYDROGRAPH AT STATION SB02
 TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.45, TOTAL EXCESS = 2.29

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)				
+ 488.	0.95	38.	10.	5.	5.	
		(INCHES)	2.276	2.276	2.276	2.276
		(AC-FT)	19.	19.	19.	19.

CUMULATIVE AREA = 0.16 SQ MI

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

HYDROGRAPH AT STATION SB02
 TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.49, TOTAL EXCESS = 2.19

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)				
+ 433.	1.00	37.	9.	4.	4.	
		(INCHES)	2.183	2.183	2.183	2.183
		(AC-FT)	18.	18.	18.	18.

CUMULATIVE AREA = 0.16 SQ MI

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

HYDROGRAPH AT STATION SB02
 TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.54, TOTAL EXCESS = 2.00

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)				
+ 365.	1.00	34.	8.	4.	4.	
		(INCHES)	1.994	1.994	1.994	1.994
		(AC-FT)	17.	17.	17.	17.

CUMULATIVE AREA = 0.16 SQ MI

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

HYDROGRAPH AT STATION SB02
 TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.56, TOTAL EXCESS = 1.67

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	278.	1.00	28.	7.	3.	3.
		(INCHES)	1.660	1.660	1.660	1.660
		(AC-FT)	14.	14.	14.	14.
		CUMULATIVE AREA =	0.16 SQ MI			
***	***	***	***	***	***	***

INTERPOLATED HYDROGRAPH AT SB02

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	489.	0.95	38.	10.	5.	5.
		(INCHES)	2.278	2.278	2.278	2.278
		(AC-FT)	19.	19.	19.	19.
		CUMULATIVE AREA =	0.16 SQ MI			

*** **

92 KK *****
 * CP-2 * COMBINE
 * *

 SR 101L FREEWAY AND 76TH ST (MILLER RD CHANNEL)

94 HC HYDROGRAPH COMBINATION
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION CP-2
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	740.	1.05	75.	20.	10.	10.
		(INCHES)	1.372	1.495	1.529	1.529
		(AC-FT)	37.	41.	42.	42.
		CUMULATIVE AREA =	0.51 SQ MI			
***	***	***	***	***	***	***

HYDROGRAPH AT STATION CP-2
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	732.	1.05	75.	20.	10.	10.
		(INCHES)	1.363	1.486	1.521	1.521
		(AC-FT)	37.	40.	41.	41.
		CUMULATIVE AREA =	0.51 SQ MI			
***	***	***	***	***	***	***

HYDROGRAPH AT STATION CP-2
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME		6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	654.	1.05	72.	20.	10.	10.
		(INCHES)	1.311	1.433	1.468	1.468
		(AC-FT)	36.	39.	40.	40.
		CUMULATIVE AREA =	0.51 SQ MI			

*** **

HYDROGRAPH AT STATION CP-2
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
556.	1.10	66.	18.	9.	9.
		(INCHES) 1.207	1.332	1.367	1.367
		(AC-FT) 33.	36.	37.	37.
CUMULATIVE AREA =		0.51 SQ MI			

*** **

HYDROGRAPH AT STATION CP-2
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
422.	1.10	56.	16.	8.	8.
		(INCHES) 1.028	1.156	1.190	1.190
		(AC-FT) 28.	31.	32.	32.
CUMULATIVE AREA =		0.51 SQ MI			

*** **

INTERPOLATED HYDROGRAPH AT CP-2

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
731.	1.05	75.	20.	10.	10.
		(INCHES) 1.362	1.485	1.520	1.520
		(AC-FT) 37.	40.	41.	41.
CUMULATIVE AREA =		0.51 SQ MI			

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 * *
 95 KK * R2-3 *
 * *

MILLER RD CHANNEL FROM SR 101L FREEWAY TO MAYO BLVD

HYDROGRAPH ROUTING DATA

97 RK KINEMATIC WAVE STREAM ROUTING
 L 1260. CHANNEL LENGTH
 S 0.0015 SLOPE
 N 0.030 CHANNEL ROUGHNESS COEFFICIENT
 CA 0.00 CONTRIBUTING AREA
 SHAPE TRAP CHANNEL SHAPE
 WD 92.00 BOTTOM WIDTH OR DIAMETER
 Z 4.00 SIDE SLOPE
 NDXMIN 2 MINIMUM NUMBER OF DX INTERVALS

 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.13	1.58	1.61	420.00	726.00	65.69	1.53	4.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4152E+02 EXCESS=0.0000E+00 OUTFLOW=0.4152E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.13	1.58	3.00	725.57	66.00	1.53
------	------	------	------	--------	-------	------

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HYDROGRAPH AT STATION R2-3
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
726.	1.10	75.	20.	10.	10.
		(INCHES) 1.373	1.495	1.529	1.529
		(AC-FT) 37.	41.	42.	42.

CUMULATIVE AREA = 0.51 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.13	1.58	1.61	420.00	719.73	65.75	1.52	4.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4128E+02 EXCESS=0.0000E+00 OUTFLOW=0.4128E+02 BASIN STORAGE=0.4197E-01 PERCENT ERROR=-0.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.13	1.58	3.00	719.25	66.00	1.52
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HYDROGRAPH AT STATION R2-3
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
719.	1.10	75.	20.	10.	10.
		(INCHES) 1.364	1.486	1.521	1.521
		(AC-FT) 37.	40.	41.	41.

CUMULATIVE AREA = 0.51 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.13	1.58	1.65	420.00	650.44	66.16	1.47	4.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3985E+02 EXCESS=0.0000E+00 OUTFLOW=0.3986E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.13	1.58	3.00	647.31	66.00	1.47
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HYDROGRAPH AT STATION R2-3
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
647.	1.10	72.	20.	10.	10.
		(INCHES) 1.313	1.435	1.469	1.469
		(AC-FT) 36.	39.	40.	40.

CUMULATIVE AREA = 0.51 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.13	1.58	1.61	420.00	553.64	68.36	1.37	4.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3711E+02 EXCESS=0.0000E+00 OUTFLOW=0.3710E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	0.13	1.58	3.00	550.82	69.00	1.37		
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		R2-3						
	TRANSPOSITION AREA		16.0 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR			
+ 551.	1.15	(CFS)	66.	18.	9.	9.			
		(INCHES)	1.206	1.332	1.366	1.366			
		(AC-FT)	33.	36.	37.	37.			
		CUMULATIVE AREA =	0.51 SQ MI						
	COMPUTED KINEMATIC PARAMETERS								
	VARIABLE TIME STEP								
	(DT SHOWN IS A MINIMUM)								
	ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO	VOLUME	MAXIMUM
				(MIN)	(FT)	(CFS)	PEAK	(IN)	CELERITY
							(MIN)		(FPS)
	MAIN	0.13	1.58	1.77	420.00	421.93	69.46	1.19	3.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3232E+02 EXCESS=0.0000E+00 OUTFLOW=0.3234E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.2

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	0.13	1.58	3.00	418.11	69.00	1.19		
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		R2-3						
	TRANSPOSITION AREA		90.0 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR			
+ 418.	1.15	(CFS)	56.	16.	8.	8.			
		(INCHES)	1.029	1.157	1.192	1.192			
		(AC-FT)	28.	31.	32.	32.			
		CUMULATIVE AREA =	0.51 SQ MI						
***	***	***	***	***	***				
	INTERPOLATED HYDROGRAPH AT		R2-3						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR			
+ 719.	1.10	(CFS)	75.	20.	10.	10.			
		(INCHES)	1.363	1.486	1.520	1.520			
		(AC-FT)	37.	40.	41.	41.			
		CUMULATIVE AREA =	0.51 SQ MI						

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*           *
98 KK *   SB03 *   BASIN
*           *
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SUBBASIN RUNOFF DATA

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99 BA   SUBBASIN CHARACTERISTICS
      TAREA   0.05 SUBBASIN AREA

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100 LG GREEN AND AMPT LOSS RATE
 STRTL 0.15 STARTING LOSS
 DTH 0.25 MOISTURE DEFICIT
 PSIF 4.50 WETTING FRONT SUCTION
 XKSAT 0.47 HYDRAULIC CONDUCTIVITY
 RTIMP 55.00 PERCENT IMPERVIOUS AREA

101 UC CLARK UNITGRAPH
 TC 0.36 TIME OF CONCENTRATION
 R 0.29 STORAGE COEFFICIENT

102 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
 0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 100.0

UNIT HYDROGRAPH PARAMETERS
 CLARK TC= 0.36 HR, R= 0.29 HR
 SNYDER TP= 0.21 HR, CP= 0.43

UNIT HYDROGRAPH
 34 END-OF-PERIOD ORDINATES
 5. 17. 43. 62. 64. 61. 56. 49. 42. 35.
 30. 25. 21. 18. 15. 12. 10. 9. 7. 6.
 5. 4. 4. 3. 3. 2. 2. 2. 1. 1.
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.

*** **

HYDROGRAPH AT STATION SB03
 TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.44, TOTAL EXCESS = 2.31

PEAK FLOW	TIME	6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)	(INCHES)	(AC-FT)	
130.	1.00	12.	2.302	6.	1.
					2.302
					6.

CUMULATIVE AREA = 0.05 SQ MI

*** **

HYDROGRAPH AT STATION SB03
 TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.44, TOTAL EXCESS = 2.30

PEAK FLOW	TIME	6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)	(INCHES)	(AC-FT)	
129.	1.00	12.	2.286	6.	1.
					2.286
					6.

CUMULATIVE AREA = 0.05 SQ MI

*** **

HYDROGRAPH AT STATION SB03
 TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.48, TOTAL EXCESS = 2.21

PEAK FLOW	TIME	6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)	(INCHES)	(AC-FT)	
117.	1.00	11.	2.198	6.	1.
					2.198
					6.

CUMULATIVE AREA = 0.05 SQ MI

*** **

HYDROGRAPH AT STATION SB03
 TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.52, TOTAL EXCESS = 2.02

PEAK FLOW	TIME	6-HR	24-HR	72-HR	49.95-HR
(CFS)	(HR)	(CFS)			

Onsite_6hr.out
 + 99. 1.05 10. 3. 1. 1.
 (INCHES) 2.014 2.014 2.014 2.014
 (AC-FT) 5. 5. 5. 5.

CUMULATIVE AREA = 0.05 SQ MI

*** **

HYDROGRAPH AT STATION SB03
 TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.54, TOTAL EXCESS = 1.69

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
 + (CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
 (CFS)
 + 77. 1.05 9. 2. 1. 1.
 (INCHES) 1.679 1.679 1.679 1.679
 (AC-FT) 4. 4. 4. 4.

CUMULATIVE AREA = 0.05 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT SB03

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
 + (CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
 (CFS)
 + 129. 1.00 12. 3. 1. 1.
 (INCHES) 2.290 2.290 2.290 2.290
 (AC-FT) 6. 6. 6. 6.

CUMULATIVE AREA = 0.05 SQ MI

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104 KK

 * *
 * CP-3 *
 * *

COMBINE

MAYO BLVD AND 76TH ST (MILLER RD CHANNEL)

106 HC

HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

*** **

HYDROGRAPH AT STATION CP-3
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
 + (CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
 (CFS)
 + 840. 1.10 87. 23. 11. 11.
 (INCHES) 1.449 1.564 1.596 1.596
 (AC-FT) 43. 46. 47. 47.

CUMULATIVE AREA = 0.56 SQ MI

*** **

HYDROGRAPH AT STATION CP-3
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
 + (CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
 (CFS)
 + 833. 1.10 86. 23. 11. 11.
 (INCHES) 1.439 1.555 1.587 1.587
 (AC-FT) 43. 46. 47. 47.

CUMULATIVE AREA = 0.56 SQ MI

*** **

HYDROGRAPH AT STATION CP-3

TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
755.	1.10	83.	22.	11.	11.
		(INCHES) 1.385	1.500	1.532	1.532
		(AC-FT) 41.	45.	46.	46.

CUMULATIVE AREA = 0.56 SQ MI

*** **

HYDROGRAPH AT STATION CP-3
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
638.	1.15	76.	21.	10.	10.
		(INCHES) 1.271	1.390	1.422	1.422
		(AC-FT) 38.	41.	42.	42.

CUMULATIVE AREA = 0.56 SQ MI

*** **

HYDROGRAPH AT STATION CP-3
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
487.	1.15	65.	18.	9.	9.
		(INCHES) 1.080	1.202	1.234	1.234
		(AC-FT) 32.	36.	37.	37.

CUMULATIVE AREA = 0.56 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT CP-3

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
828.	1.10	86.	23.	11.	11.
		(INCHES) 1.435	1.552	1.583	1.583
		(AC-FT) 43.	46.	47.	47.

CUMULATIVE AREA = 0.56 SQ MI

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 * *
 107 KK * R3-5 * ROUTE *
 * *

MILLER RD CHANNEL FROM MAYO BLVD TO PRINCESS BLVD

HYDROGRAPH ROUTING DATA

109 RK KINEMATIC WAVE STREAM ROUTING

L	2396.	CHANNEL LENGTH
S	0.0015	SLOPE
N	0.030	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	98.00	BOTTOM WIDTH OR DIAMETER
Z	4.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)

Onsite_6hr.out

MAIN 0.12 1.58 2.78 798.67 817.36 73.14 1.60 5.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4741E+02 EXCESS=0.0000E+00 OUTFLOW=0.4763E+02 BASIN STORAGE=0.8222E-01 PERCENT ERROR=-0.6

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.12 1.58 3.00 816.94 72.00 1.60

*** **

HYDROGRAPH AT STATION R3-5
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
817.	1.20	87.	24.	12.	12.
		(INCHES) 1.450	1.571	1.602	1.602
		(AC-FT) 43.	47.	48.	48.

CUMULATIVE AREA = 0.56 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.12	1.58	2.79	798.67	810.60	70.45	1.59	4.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4713E+02 EXCESS=0.0000E+00 OUTFLOW=0.4736E+02 BASIN STORAGE=0.8222E-01 PERCENT ERROR=-0.7

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.12 1.58 3.00 810.54 72.00 1.59

*** **

HYDROGRAPH AT STATION R3-5
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
811.	1.20	86.	23.	11.	11.
		(INCHES) 1.440	1.562	1.593	1.593
		(AC-FT) 43.	46.	47.	47.

CUMULATIVE AREA = 0.56 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.12	1.58	2.90	798.67	742.52	73.90	1.54	4.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4551E+02 EXCESS=0.0000E+00 OUTFLOW=0.4571E+02 BASIN STORAGE=0.8226E-01 PERCENT ERROR=-0.6

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.12 1.58 3.00 740.16 72.00 1.54

*** **

HYDROGRAPH AT STATION R3-5
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
740.	1.20	83.	23.	11.	11.
		(INCHES) 1.385	1.506	1.537	1.537

(AC-FT) 41. 45. Onsite_6hr.out 46. 46.

CUMULATIVE AREA = 0.56 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.12	1.58	3.00	798.67	634.55	73.70	1.43	4.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4224E+02 EXCESS=0.0000E+00 OUTFLOW=0.4240E+02 BASIN STORAGE=0.8222E-01 PERCENT ERROR=-0.6

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.12	1.58	3.00	626.49	75.00	1.43
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HYDROGRAPH AT STATION R3-5
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 626.	1.25	(CFS) 76.	21.	10.	10.
		(INCHES) 1.271	1.396	1.427	1.427
		(AC-FT) 38.	41.	42.	42.

CUMULATIVE AREA = 0.56 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.12	1.58	3.00	798.67	478.66	74.64	1.24	4.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3665E+02 EXCESS=0.0000E+00 OUTFLOW=0.3688E+02 BASIN STORAGE=0.8233E-01 PERCENT ERROR=-0.8

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.12	1.58	3.00	478.05	75.00	1.24
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HYDROGRAPH AT STATION R3-5
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 478.	1.25	(CFS) 65.	18.	9.	9.
		(INCHES) 1.082	1.210	1.242	1.242
		(AC-FT) 32.	36.	37.	37.

CUMULATIVE AREA = 0.56 SQ MI

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INTERPOLATED HYDROGRAPH AT R3-5

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 806.	1.20	(CFS) 86.	23.	11.	11.
		(INCHES) 1.437	1.558	1.589	1.589
		(AC-FT) 43.	46.	47.	47.

CUMULATIVE AREA = 0.56 SQ MI

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*
* SB04 * BASIN
*

SUBBASIN RUNOFF DATA

111 BA SUBBASIN CHARACTERISTICS
TAREA 0.14 SUBBASIN AREA

112 LG GREEN AND AMPT LOSS RATE
STRTL 0.14 STARTING LOSS
DTH 0.25 MOISTURE DEFICIT
PSIF 4.60 WETTING FRONT SUCTION
XKSAT 0.44 HYDRAULIC CONDUCTIVITY
RTIMP 61.00 PERCENT IMPERVIOUS AREA

113 UC CLARK UNITGRAPH
TC 0.30 TIME OF CONCENTRATION
R 0.20 STORAGE COEFFICIENT

114 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
100.0

UNIT HYDROGRAPH PARAMETERS
CLARK TC= 0.30 HR, R= 0.20 HR
SNYDER TP= 0.18 HR, CP= 0.54

UNIT HYDROGRAPH
24 END-OF-PERIOD ORDINATES
26. 107. 218. 267. 245. 215. 177. 137. 106. 82.
63. 49. 38. 29. 23. 18. 14. 11. 8. 6.
5. 4. 3. 2.

HYDROGRAPH AT STATION SB04
TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.38, TOTAL EXCESS = 2.38

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
528.	0.95	37.	9.	4.	4.
		(INCHES) 2.369	2.369	2.369	2.369
		(AC-FT) 18.	18.	18.	18.

CUMULATIVE AREA = 0.14 SQ MI

HYDROGRAPH AT STATION SB04
TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.37, TOTAL EXCESS = 2.36

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
524.	0.95	36.	9.	4.	4.
		(INCHES) 2.353	2.353	2.353	2.353
		(AC-FT) 18.	18.	18.	18.

CUMULATIVE AREA = 0.14 SQ MI

HYDROGRAPH AT STATION SB04
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.40, TOTAL EXCESS = 2.28

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
452.	0.95	35.	9.	4.	4.
		(INCHES) 2.272	2.272	2.272	2.272
		(AC-FT) 17.	17.	17.	17.

CUMULATIVE AREA = 0.14 SQ MI

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HYDROGRAPH AT STATION SB04
 TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.44, TOTAL EXCESS = 2.10

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
382.	1.00	32.	8.	4.	4.
		(INCHES) 2.095	2.095	2.095	2.095
		(AC-FT) 16.	16.	16.	16.

CUMULATIVE AREA = 0.14 SQ MI

*** **

HYDROGRAPH AT STATION SB04
 TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.46, TOTAL EXCESS = 1.77

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
293.	1.00	27.	7.	3.	3.
		(INCHES) 1.763	1.763	1.763	1.763
		(AC-FT) 14.	14.	14.	14.

CUMULATIVE AREA = 0.14 SQ MI

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INTERPOLATED HYDROGRAPH AT SB04

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
525.	0.95	36.	9.	4.	4.
		(INCHES) 2.356	2.356	2.356	2.356
		(AC-FT) 18.	18.	18.	18.

CUMULATIVE AREA = 0.14 SQ MI

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 * R4-5 *
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PRINCESS BLVD CHANNEL FROM 77TH ST TO 76TH ST

HYDROGRAPH ROUTING DATA

118 RK KINEMATIC WAVE STREAM ROUTING

L	2005.	CHANNEL LENGTH
S	0.0013	SLOPE
N	0.030	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	39.00	BOTTOM WIDTH OR DIAMETER
Z	4.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	0.23	1.51	2.41	668.33	520.58	62.34	2.39	4.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1819E+02 EXCESS=0.0000E+00 OUTFLOW=0.1838E+02 BASIN STORAGE=0.3179E-04 PERCENT ERROR=-1.0

Onsite_6hr.out
INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	0.23	1.51	3.00		513.38	63.00	2.40	
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		R4-5						
	TRANSPPOSITION AREA		0.0 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
			6-HR	24-HR	72-HR	49.95-HR			
+ (CFS)	(HR)	(CFS)							
+ 513.	1.05	37.	9.	4.	4.				
		(INCHES)	2.401	2.402	2.402	2.402			
		(AC-FT)	18.	18.	18.	18.			
	CUMULATIVE AREA =		0.14 SQ MI						
	COMPUTED KINEMATIC PARAMETERS VARIABLE TIME STEP (DT SHOWN IS A MINIMUM)								
	ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
				(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
	MAIN	0.23	1.51	2.42	668.33	516.56	62.40	2.38	4.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1807E+02 EXCESS=0.0000E+00 OUTFLOW=0.1825E+02 BASIN STORAGE=0.4744E-04 PERCENT ERROR=-1.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	0.23	1.51	3.00		510.06	63.00	2.39	
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		R4-5						
	TRANSPPOSITION AREA		0.5 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
			6-HR	24-HR	72-HR	49.95-HR			
+ (CFS)	(HR)	(CFS)							
+ 510.	1.05	37.	9.	4.	4.				
		(INCHES)	2.386	2.386	2.386	2.386			
		(AC-FT)	18.	18.	18.	18.			
	CUMULATIVE AREA =		0.14 SQ MI						
	COMPUTED KINEMATIC PARAMETERS VARIABLE TIME STEP (DT SHOWN IS A MINIMUM)								
	ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
				(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
	MAIN	0.23	1.51	2.55	668.33	451.64	62.77	2.29	4.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1745E+02 EXCESS=0.0000E+00 OUTFLOW=0.1762E+02 BASIN STORAGE=0.4583E-04 PERCENT ERROR=-1.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	0.23	1.51	3.00		451.16	63.00	2.30
***	***	***	***	***	***			
	HYDROGRAPH AT STATION		R4-5					
	TRANSPPOSITION AREA		2.8 SQ MI					
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW					
			6-HR	24-HR	72-HR	49.95-HR		
+ (CFS)	(HR)	(CFS)						
+ 451.	1.05	36.	9.	4.	4.			
		(INCHES)	2.301	2.302	2.302	2.302		
		(AC-FT)	18.	18.	18.	18.		
	CUMULATIVE AREA =		0.14 SQ MI					
	COMPUTED KINEMATIC PARAMETERS VARIABLE TIME STEP (DT SHOWN IS A MINIMUM)							

ELEMENT	ALPHA	M	DT (MIN)	Onsite_6hr.out DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.23	1.51	2.73	668.33	379.50	64.90	2.12	4.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1609E+02 EXCESS=0.0000E+00 OUTFLOW=0.1629E+02 BASIN STORAGE=0.4132E-04 PERCENT ERROR=-1.2

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.23	1.51	3.00	374.76	63.00	2.12
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HYDROGRAPH AT STATION R4-5
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	MAXIMUM 24-HR	AVERAGE FLOW 72-HR	49.95-HR
+ 375.	1.05	33.	8.	4.	4.
		(INCHES) 2.115	2.116	2.116	2.116
		(AC-FT) 16.	16.	16.	16.

CUMULATIVE AREA = 0.14 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.23	1.51	2.87	668.33	291.80	65.24	1.78	3.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1354E+02 EXCESS=0.0000E+00 OUTFLOW=0.1370E+02 BASIN STORAGE=0.4337E-04 PERCENT ERROR=-1.2

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.23	1.51	3.00	288.81	66.00	1.78
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HYDROGRAPH AT STATION R4-5
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	MAXIMUM 24-HR	AVERAGE FLOW 72-HR	49.95-HR
+ 289.	1.10	28.	7.	3.	3.
		(INCHES) 1.782	1.782	1.782	1.782
		(AC-FT) 14.	14.	14.	14.

CUMULATIVE AREA = 0.14 SQ MI

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INTERPOLATED HYDROGRAPH AT R4-5

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	MAXIMUM 24-HR	AVERAGE FLOW 72-HR	49.95-HR
+ 511.	1.05	37.	9.	4.	4.
		(INCHES) 2.388	2.388	2.388	2.388
		(AC-FT) 18.	18.	18.	18.

CUMULATIVE AREA = 0.14 SQ MI

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119 KK

* *
* SB05 *
* *

BASIN

SUBBASIN RUNOFF DATA

120 BA SUBBASIN CHARACTERISTICS
TAREA 0.13 SUBBASIN AREA

121 LG GREEN AND AMPT LOSS RATE
STRTL 0.22 STARTING LOSS
DTH 0.25 MOISTURE DEFICIT
PSIF 4.50 WETTING FRONT SUCTION
XKSAT 0.44 HYDRAULIC CONDUCTIVITY
RTIMP 48.00 PERCENT IMPERVIOUS AREA

122 UC CLARK UNITGRAPH
TC 0.33 TIME OF CONCENTRATION
R 0.22 STORAGE COEFFICIENT

123 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
100.0

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.33 HR, R= 0.22 HR
SNYDER TP= 0.19 HR, CP= 0.50

UNIT HYDROGRAPH

27 END-OF-PERIOD ORDINATES

18.	67.	154.	208.	200.	181.	156.	129.	103.	82.
66.	53.	42.	34.	27.	21.	17.	14.	11.	9.
7.	6.	4.	4.	3.	2.	2.			

HYDROGRAPH AT STATION SB05
TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.52, TOTAL EXCESS = 2.23

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
402.	0.95	30.	8.	4.	4.
		(INCHES) 2.223	2.223	2.223	2.223
		(AC-FT) 15.	15.	15.	15.

CUMULATIVE AREA = 0.13 SQ MI

HYDROGRAPH AT STATION SB05
TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.52, TOTAL EXCESS = 2.22

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
399.	0.95	30.	7.	4.	4.
		(INCHES) 2.208	2.208	2.208	2.208
		(AC-FT) 15.	15.	15.	15.

CUMULATIVE AREA = 0.13 SQ MI

HYDROGRAPH AT STATION SB05
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.56, TOTAL EXCESS = 2.13

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
352.	1.00	29.	7.	3.	3.
		(INCHES) 2.118	2.118	2.118	2.118
		(AC-FT) 14.	14.	14.	14.

CUMULATIVE AREA = 0.13 SQ MI

HYDROGRAPH AT STATION SB05
TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.60, TOTAL EXCESS = 1.94

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
296.	1.00	(CFS)	26.	7.	3.	3.
		(INCHES)	1.930	1.930	1.930	1.930
		(AC-FT)	13.	13.	13.	13.
CUMULATIVE AREA =			0.13 SQ MI			

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HYDROGRAPH AT STATION SB05
TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.63, TOTAL EXCESS = 1.60

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
225.	1.00	(CFS)	22.	5.	3.	3.
		(INCHES)	1.593	1.593	1.593	1.593
		(AC-FT)	11.	11.	11.	11.
CUMULATIVE AREA =			0.13 SQ MI			

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INTERPOLATED HYDROGRAPH AT SB05

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
399.	0.95	(CFS)	30.	7.	4.	4.
		(INCHES)	2.210	2.210	2.210	2.210
		(AC-FT)	15.	15.	15.	15.
CUMULATIVE AREA =			0.13 SQ MI			

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 * *
 125 KK * CP-5 * COMBINE
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PRINCESS BLVD AND 76TH ST (PRINCESS BLVD CHANNEL)

127 HC HYDROGRAPH COMBINATION
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION CP-5
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1452.	1.15	(CFS)	153.	40.	20.	20.
		(INCHES)	1.715	1.814	1.836	1.836
		(AC-FT)	76.	80.	81.	81.
CUMULATIVE AREA =			0.83 SQ MI			

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HYDROGRAPH AT STATION CP-5
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1440.	1.15	(CFS)	152.	40.	19.	19.
		(INCHES)	1.703	1.803	1.824	1.824
		(AC-FT)	75.	80.	80.	80.
CUMULATIVE AREA =			0.83 SQ MI			

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HYDROGRAPH AT STATION CP-5
TRANSPOSITION AREA 2.8 SQ MI

Table with 6 columns: PEAK FLOW (CFS), TIME (HR), (CFS), (INCHES), (AC-FT), and MAXIMUM AVERAGE FLOW (6-HR, 24-HR, 72-HR, 49.95-HR). Row 1: 1335, 1.15, 146, 1.638, 72, 39, 1.737, 19, 1.759, 19.

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HYDROGRAPH AT STATION CP-5
TRANSPOSITION AREA 16.0 SQ MI

Table with 6 columns: PEAK FLOW (CFS), TIME (HR), (CFS), (INCHES), (AC-FT), and MAXIMUM AVERAGE FLOW (6-HR, 24-HR, 72-HR, 49.95-HR). Row 1: 1121, 1.15, 133, 1.499, 66, 36, 1.602, 17, 1.623, 17.

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HYDROGRAPH AT STATION CP-5
TRANSPOSITION AREA 90.0 SQ MI

Table with 6 columns: PEAK FLOW (CFS), TIME (HR), (CFS), (INCHES), (AC-FT), and MAXIMUM AVERAGE FLOW (6-HR, 24-HR, 72-HR, 49.95-HR). Row 1: 844, 1.20, 112, 1.262, 56, 30, 1.368, 15, 1.389, 15.

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INTERPOLATED HYDROGRAPH AT CP-5

Table with 6 columns: PEAK FLOW (CFS), TIME (HR), (CFS), (INCHES), (AC-FT), and MAXIMUM AVERAGE FLOW (6-HR, 24-HR, 72-HR, 49.95-HR). Row 1: 1410, 1.15, 150, 1.684, 74, 40, 1.784, 19, 1.805, 19.

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128 KK * R5-6 *
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PRINCESS BLVD CHANNEL FROM 76TH ST TO SCOTTSDALE RD

HYDROGRAPH ROUTING DATA

Table with 2 columns: Parameter and Value. Parameters include L (1550), S (0.0015), N (0.030), CA (0.00), SHAPE (TRAP), WD (188.00), Z (4.00), and NDXMIN (2).

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

Onsite_6hr.out

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.07	1.62	1.71	516.67	1430.15	73.26	1.84	5.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8096E+02 EXCESS=0.0000E+00 OUTFLOW=0.8101E+02 BASIN STORAGE=0.7278E-01 PERCENT ERROR=-0.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.07	1.62	3.00		1428.13	72.00	1.84	
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HYDROGRAPH AT STATION R5-6
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1428.	1.20	(CFS) 153.	40.	20.	20.
		(INCHES) 1.715	1.815	1.836	1.836
		(AC-FT) 76.	80.	81.	81.

CUMULATIVE AREA = 0.83 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.07	1.62	1.72	516.67	1417.75	71.63	1.82	5.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8047E+02 EXCESS=0.0000E+00 OUTFLOW=0.8049E+02 BASIN STORAGE=0.7282E-01 PERCENT ERROR=-0.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.07	1.62	3.00		1417.68	72.00	1.82	
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HYDROGRAPH AT STATION R5-6
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1418.	1.20	(CFS) 151.	40.	19.	19.
		(INCHES) 1.703	1.803	1.824	1.824
		(AC-FT) 75.	80.	80.	80.

CUMULATIVE AREA = 0.83 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.07	1.62	1.83	516.67	1320.58	72.30	1.76	4.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7757E+02 EXCESS=0.0000E+00 OUTFLOW=0.7762E+02 BASIN STORAGE=0.6818E-01 PERCENT ERROR=-0.2

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.07	1.62	3.00		1310.29	72.00	1.76	
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HYDROGRAPH AT STATION R5-6
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR

Onsite_6hr.out

+ (CFS) (HR) (CFS)
 + 1310. 1.20 146. 39. 19. 19.
 (INCHES) 1.639 1.739 1.760 1.760
 (AC-FT) 72. 77. 78. 78.

CUMULATIVE AREA = 0.83 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.07	1.62	1.92	516.67	1120.07	73.97	1.62	4.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7160E+02 EXCESS=0.0000E+00 OUTFLOW=0.7164E+02 BASIN STORAGE=0.7274E-01 PERCENT ERROR=-0.2

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.07	1.62	3.00	1117.54	75.00	1.62
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HYDROGRAPH AT STATION R5-6
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	49.95-HR MAXIMUM AVERAGE FLOW
+ 1118.	1.25	133.	36.	17.	17.
		(INCHES) 1.500	1.603	1.624	1.624
		(AC-FT) 66.	71.	72.	72.

CUMULATIVE AREA = 0.83 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.07	1.62	2.16	516.67	837.38	77.35	1.39	4.17

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6127E+02 EXCESS=0.0000E+00 OUTFLOW=0.6143E+02 BASIN STORAGE=0.6818E-01 PERCENT ERROR=-0.4

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.07	1.62	3.00	834.70	75.00	1.39
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HYDROGRAPH AT STATION R5-6
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	49.95-HR MAXIMUM AVERAGE FLOW
+ 835.	1.25	112.	30.	15.	15.
		(INCHES) 1.264	1.371	1.392	1.392
		(AC-FT) 56.	60.	61.	61.

CUMULATIVE AREA = 0.83 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT R5-6

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	49.95-HR MAXIMUM AVERAGE FLOW
+ 1386.	1.20	150.	40.	19.	19.
		(INCHES) 1.684	1.785	1.806	1.806
		(AC-FT) 74.	79.	80.	80.

CUMULATIVE AREA = 0.83 SQ MI

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*
* SB06 * BASIN
*

SUBBASIN RUNOFF DATA

132 BA SUBBASIN CHARACTERISTICS

TAREA 0.14 SUBBASIN AREA

133 LG GREEN AND AMPT LOSS RATE

STRTL 0.16 STARTING LOSS
DTH 0.25 MOISTURE DEFICIT
PSIF 4.55 WETTING FRONT SUCTION
XKSAT 0.45 HYDRAULIC CONDUCTIVITY
RTIMP 53.00 PERCENT IMPERVIOUS AREA

134 UC CLARK UNITGRAPH

TC 0.32 TIME OF CONCENTRATION
R 0.24 STORAGE COEFFICIENT

135 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES

0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
100.0

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.32 HR, R= 0.24 HR
SNYDER TP= 0.19 HR, CP= 0.48

UNIT HYDROGRAPH

29 END-OF-PERIOD ORDINATES

18. 72. 161. 214. 206. 189. 164. 136. 111. 90.
73. 60. 49. 39. 32. 26. 21. 17. 14. 11.
9. 8. 6. 5. 4. 3. 3. 2. 2.

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HYDROGRAPH AT STATION SB06
TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.30

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 422. 0.95 33. 8. 4. 4.
(INCHES) 2.285 2.285 2.285 2.285
(AC-FT) 17. 17. 17. 17.

CUMULATIVE AREA = 0.14 SQ MI

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HYDROGRAPH AT STATION SB06
TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.28

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 419. 0.95 33. 8. 4. 4.
(INCHES) 2.269 2.269 2.269 2.269
(AC-FT) 16. 16. 16. 16.

CUMULATIVE AREA = 0.14 SQ MI

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HYDROGRAPH AT STATION SB06
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.50, TOTAL EXCESS = 2.19

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 373. 1.00 32. 8. 4. 4.
(INCHES) 2.181 2.181 2.181 2.181

(AC-FT) 16. 16. Onsite_6hr.out 16. 16.

CUMULATIVE AREA = 0.14 SQ MI

*** **

HYDROGRAPH AT STATION SB06
TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.53, TOTAL EXCESS = 2.01

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR
316.	1.00	29.	7.	4.	4.
		(INCHES)	1.997	1.997	1.997
		(AC-FT)	14.	14.	14.

CUMULATIVE AREA = 0.14 SQ MI

*** **

HYDROGRAPH AT STATION SB06
TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.56, TOTAL EXCESS = 1.67

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR
241.	1.00	24.	6.	3.	3.
		(INCHES)	1.661	1.661	1.661
		(AC-FT)	12.	12.	12.

CUMULATIVE AREA = 0.14 SQ MI

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INTERPOLATED HYDROGRAPH AT SB06

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR
420.	0.95	33.	8.	4.	4.
		(INCHES)	2.272	2.272	2.272
		(AC-FT)	16.	16.	16.

CUMULATIVE AREA = 0.14 SQ MI

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* CP-6 *
* *

137 KK

COMBINE

PRINCESS BLVD AND SCOTTSDALE RD (PRINCESS BLVD CHANNEL)

139 HC

HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION CP-6
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR
1662.	1.20	185.	49.	24.	24.
		(INCHES)	1.782	1.881	1.900
		(AC-FT)	92.	97.	98.

CUMULATIVE AREA = 0.96 SQ MI

*** **

HYDROGRAPH AT STATION CP-6

TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1650.	1.20	(CFS)	183.	48.	23.	23.
		(INCHES)	1.769	1.869	1.887	1.887
		(AC-FT)	91.	96.	97.	97.

CUMULATIVE AREA = 0.96 SQ MI

*** **

HYDROGRAPH AT STATION CP-6
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1542.	1.20	(CFS)	176.	47.	23.	23.
		(INCHES)	1.702	1.801	1.820	1.820
		(AC-FT)	87.	93.	93.	93.

CUMULATIVE AREA = 0.96 SQ MI

*** **

HYDROGRAPH AT STATION CP-6
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1308.	1.20	(CFS)	161.	43.	21.	21.
		(INCHES)	1.555	1.659	1.677	1.677
		(AC-FT)	80.	85.	86.	86.

CUMULATIVE AREA = 0.96 SQ MI

*** **

HYDROGRAPH AT STATION CP-6
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
982.	1.25	(CFS)	135.	37.	18.	18.
		(INCHES)	1.305	1.412	1.430	1.430
		(AC-FT)	67.	73.	73.	73.

CUMULATIVE AREA = 0.96 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT CP-6

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1609.	1.20	(CFS)	181.	48.	23.	23.
		(INCHES)	1.743	1.843	1.862	1.862
		(AC-FT)	90.	95.	96.	96.

CUMULATIVE AREA = 0.96 SQ MI

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140 KK * SB07 * BASIN
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SUBBASIN RUNOFF DATA

141 BA SUBBASIN CHARACTERISTICS
TAREA 0.07 SUBBASIN AREA

142 LG GREEN AND AMPT LOSS RATE
 STRTL 0.21 STARTING LOSS
 DTH 0.25 MOISTURE DEFICIT
 PSIF 4.00 WETTING FRONT SUCTION
 XKSAT 0.58 HYDRAULIC CONDUCTIVITY
 RTIMP 49.00 PERCENT IMPERVIOUS AREA

143 UC CLARK UNITGRAPH
 TC 0.20 TIME OF CONCENTRATION
 R 0.11 STORAGE COEFFICIENT

144 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
 0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 100.0

UNIT HYDROGRAPH PARAMETERS
 CLARK TC= 0.20 HR, R= 0.11 HR
 SNYDER TP= 0.13 HR, CP= 0.62

UNIT HYDROGRAPH
 14 END-OF-PERIOD ORDINATES

39. 156. 219. 180. 130. 84. 53. 34. 22. 14.
 9. 6. 4. 2.

HYDROGRAPH AT STATION SB07
 TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.54, TOTAL EXCESS = 2.22

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(CFS)				
+	386.	0.90	18.	4.	2.	2.
		(INCHES)	2.209	2.209	2.209	2.209
		(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

HYDROGRAPH AT STATION SB07
 TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.54, TOTAL EXCESS = 2.20

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(CFS)				
+	384.	0.90	17.	4.	2.	2.
		(INCHES)	2.193	2.193	2.193	2.193
		(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

HYDROGRAPH AT STATION SB07
 TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.58, TOTAL EXCESS = 2.10

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(CFS)				
+	308.	0.90	17.	4.	2.	2.
		(INCHES)	2.095	2.095	2.095	2.095
		(AC-FT)	8.	8.	8.	8.

CUMULATIVE AREA = 0.07 SQ MI

HYDROGRAPH AT STATION SB07
 TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.63, TOTAL EXCESS = 1.91

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(CFS)				
+	249.	0.90	15.	4.	2.	2.
		(INCHES)	1.901	1.901	1.901	1.901
		(AC-FT)	8.	8.	8.	8.

CUMULATIVE AREA = 0.07 SQ MI

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HYDROGRAPH AT STATION SB07
 TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.66, TOTAL EXCESS = 1.57

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
181.	0.90	12.	3.	1.	1.
		(INCHES) 1.563	1.563	1.563	1.563
		(AC-FT) 6.	6.	6.	6.

CUMULATIVE AREA = 0.07 SQ MI

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INTERPOLATED HYDROGRAPH AT SB07

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
384.	0.90	17.	4.	2.	2.
		(INCHES) 2.197	2.197	2.197	2.197
		(AC-FT) 9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

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 146 KK * R7-8 *
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ROUTE

HAYDEN ROAD NORTH CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY

HYDROGRAPH ROUTING DATA

148 RK	KINEMATIC WAVE	STREAM ROUTING
	L	2778. CHANNEL LENGTH
	S	0.0014 SLOPE
	N	0.030 CHANNEL ROUGHNESS COEFFICIENT
	CA	0.00 CONTRIBUTING AREA
	SHAPE	TRAP CHANNEL SHAPE
	WD	46.00 BOTTOM WIDTH OR DIAMETER
	Z	4.00 SIDE SLOPE
	NDXMIN	2 MINIMUM NUMBER OF DX INTERVALS

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.21	1.53	2.79	694.50	374.54	61.97	2.32	4.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8717E+01 EXCESS=0.0000E+00 OUTFLOW=0.9160E+01 BASIN STORAGE=0.1297E-03 PERCENT ERROR=-5.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.21	1.53	3.00	360.59	63.00	2.31
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HYDROGRAPH AT STATION R7-8
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
361.	1.05	18.	5.	2.	2.

Onsite_6hr.out

(INCHES)	2.311	2.314	2.314	2.314
(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.21	1.53	2.80	694.50	373.06	62.02	2.31	4.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8655E+01 EXCESS=0.0000E+00 OUTFLOW=0.9098E+01 BASIN STORAGE=0.1282E-03 PERCENT ERROR=-5.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.21	1.53	3.00	359.23	63.00	2.30
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HYDROGRAPH AT STATION R7-8
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
+ 359.	1.05	(CFS)			
		18.	5.	2.	2.
		(INCHES)	2.295	2.298	2.298
		(AC-FT)	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.21	1.53	3.00	694.50	300.60	62.65	2.18	4.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8267E+01 EXCESS=0.0000E+00 OUTFLOW=0.8591E+01 BASIN STORAGE=0.1511E-03 PERCENT ERROR=-3.9

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.21	1.53	3.00	299.77	63.00	2.18
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HYDROGRAPH AT STATION R7-8
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	49.95-HR
+ 300.	1.05	(CFS)			
		17.	4.	2.	2.
		(INCHES)	2.176	2.178	2.179
		(AC-FT)	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.21	1.53	3.00	694.50	243.19	65.55	1.99	3.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7502E+01 EXCESS=0.0000E+00 OUTFLOW=0.7866E+01 BASIN STORAGE=0.1118E-03 PERCENT ERROR=-4.8

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.21	1.53	3.00	238.95	66.00	2.00
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HYDROGRAPH AT STATION R7-8
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
		(CFS)				
+ 239.	1.10	16.	4.	2.	2.	
		(INCHES)	1.995	1.997	1.997	1.997
		(AC-FT)	8.	8.	8.	8.

CUMULATIVE AREA = 0.07 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	0.21	1.53	2.82	555.60	178.83	67.24	1.61	3.33

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6168E+01 EXCESS=0.0000E+00 OUTFLOW=0.6362E+01 BASIN STORAGE=0.1260E-03 PERCENT ERROR=-3.1

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.21	1.53	3.00	176.29	66.00	1.61
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HYDROGRAPH AT STATION R7-8
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
		(CFS)				
+ 176.	1.10	13.	3.	2.	2.	
		(INCHES)	1.609	1.611	1.611	1.611
		(AC-FT)	6.	6.	6.	6.

CUMULATIVE AREA = 0.07 SQ MI

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INTERPOLATED HYDROGRAPH AT R7-8

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
		(CFS)				
+ 360.	1.05	18.	5.	2.	2.	
		(INCHES)	2.299	2.301	2.301	2.301
		(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

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 149 KK SB08 BASIN
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SUBBASIN RUNOFF DATA

150 BA	SUBBASIN CHARACTERISTICS		
	TAREA	0.22	SUBBASIN AREA
151 LG	GREEN AND AMPT LOSS RATE		
	STRTL	0.14	STARTING LOSS
	DTH	0.25	MOISTURE DEFICIT
	PSIF	4.10	WETTING FRONT SUCTION
	XKSAT	0.59	HYDRAULIC CONDUCTIVITY
	RTIMP	59.00	PERCENT IMPERVIOUS AREA
152 UC	CLARK UNITGRAPH		
	TC	0.33	TIME OF CONCENTRATION

R 0.19 STORAGE COEFFICIENT

153 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
100.0

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.33 HR, R= 0.19 HR
SNYDER TP= 0.19 HR, CP= 0.55

UNIT HYDROGRAPH
24 END-OF-PERIOD ORDINATES

35. 127. 298. 409. 385. 339. 288. 232. 179. 138.
106. 82. 63. 49. 37. 29. 22. 17. 13. 10.
8. 6. 5. 4.

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HYDROGRAPH AT STATION SB08
TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.42, TOTAL EXCESS = 2.34

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 796. 0.95 (CFS) 56. 14. 7. 7.
(INCHES) 2.325 2.325 2.325 2.325
(AC-FT) 28. 28. 28. 28.

CUMULATIVE AREA = 0.22 SQ MI

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HYDROGRAPH AT STATION SB08
TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.42, TOTAL EXCESS = 2.32

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 791. 0.95 (CFS) 56. 14. 7. 7.
(INCHES) 2.309 2.309 2.309 2.309
(AC-FT) 28. 28. 28. 28.

CUMULATIVE AREA = 0.22 SQ MI

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HYDROGRAPH AT STATION SB08
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.23

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 686. 1.00 (CFS) 53. 13. 6. 6.
(INCHES) 2.218 2.218 2.218 2.218
(AC-FT) 26. 26. 26. 26.

CUMULATIVE AREA = 0.22 SQ MI

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

HYDROGRAPH AT STATION SB08
TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.50, TOTAL EXCESS = 2.04

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
(CFS) (HR) 6-HR 24-HR 72-HR 49.95-HR
+ 577. 1.00 (CFS) 49. 12. 6. 6.
(INCHES) 2.032 2.032 2.032 2.032
(AC-FT) 24. 24. 24. 24.

CUMULATIVE AREA = 0.22 SQ MI

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

HYDROGRAPH AT STATION SB08
TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.53, TOTAL EXCESS = 1.71

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
439.	1.00	41.	10.	5.	5.
		(INCHES) 1.699	1.699	1.699	1.699
		(AC-FT) 20.	20.	20.	20.
CUMULATIVE AREA =		0.22 SQ MI			
***	***	***	***	***	***

INTERPOLATED HYDROGRAPH AT SB08

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
792.	0.95	56.	14.	7.	7.
		(INCHES) 2.311	2.311	2.311	2.311
		(AC-FT) 28.	28.	28.	28.
CUMULATIVE AREA =		0.22 SQ MI			

 *
 * CP-8 *
 *

SR 101L FREEWAY AND HAYDEN ROAD (HAYDEN ROAD NORTH CHANNEL)

157 HC HYDROGRAPH COMBINATION
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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

HYDROGRAPH AT STATION CP-8
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1041.	1.05	74.	19.	9.	9.
		(INCHES) 2.322	2.322	2.322	2.322
		(AC-FT) 37.	37.	37.	37.
CUMULATIVE AREA =		0.30 SQ MI			
***	***	***	***	***	***

HYDROGRAPH AT STATION CP-8
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1035.	1.05	74.	18.	9.	9.
		(INCHES) 2.306	2.307	2.307	2.307
		(AC-FT) 37.	37.	37.	37.
CUMULATIVE AREA =		0.30 SQ MI			
***	***	***	***	***	***

HYDROGRAPH AT STATION CP-8
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
937.	1.05	71.	18.	9.	9.
		(INCHES) 2.208	2.208	2.208	2.208
		(AC-FT) 35.	35.	35.	35.
CUMULATIVE AREA =		0.30 SQ MI			

*** **

HYDROGRAPH AT STATION CP-8
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 783.	1.05	65.	16.	8.	8.
		(INCHES) 2.023	2.023	2.023	2.023
		(AC-FT) 32.	32.	32.	32.
CUMULATIVE AREA =		0.30 SQ MI			

*** **

HYDROGRAPH AT STATION CP-8
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 561.	1.10	54.	13.	6.	6.
		(INCHES) 1.676	1.677	1.677	1.677
		(AC-FT) 27.	27.	27.	27.
CUMULATIVE AREA =		0.30 SQ MI			

*** **

INTERPOLATED HYDROGRAPH AT CP-8

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1035.	1.05	74.	18.	9.	9.
		(INCHES) 2.307	2.308	2.308	2.308
		(AC-FT) 37.	37.	37.	37.
CUMULATIVE AREA =		0.30 SQ MI			

 * *
 * R8-9 *
 * *

HAYDEN ROAD NORTH CHANNEL FROM HAYDEN ROAD TO BASIN 53R

HYDROGRAPH ROUTING DATA

160 RK	KINEMATIC WAVE STREAM ROUTING
	L 1250. CHANNEL LENGTH
	S 0.0013 SLOPE
	N 0.030 CHANNEL ROUGHNESS COEFFICIENT
	CA 0.00 CONTRIBUTING AREA
	SHAPE TRAP CHANNEL SHAPE
	WD 67.00 BOTTOM WIDTH OR DIAMETER
	Z 4.00 SIDE SLOPE
	NDXMIN 2 MINIMUM NUMBER OF DX INTERVALS

 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.15	1.56	1.32	416.67	1031.83	65.57	2.33	5.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3691E+02 EXCESS=0.0000E+00 OUTFLOW=0.3702E+02 BASIN STORAGE=0.1702E-03 PERCENT ERROR=-0.3

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.15 1.56 3.00 Onsite_6hr.out 1013.13 66.00 2.33

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

HYDROGRAPH AT STATION R8-9
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1013.	1.10	75.	19.	9.	9.
		(INCHES) 2.329	2.330	2.330	2.330
		(AC-FT) 37.	37.	37.	37.

CUMULATIVE AREA = 0.30 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.15	1.56	1.33	416.67	1027.12	65.64	2.31	5.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3666E+02 EXCESS=0.0000E+00 OUTFLOW=0.3678E+02 BASIN STORAGE=0.2024E-03 PERCENT ERROR=-0.3

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.15 1.56 3.00 1010.29 66.00 2.32

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

HYDROGRAPH AT STATION R8-9
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1010.	1.10	74.	19.	9.	9.
		(INCHES) 2.314	2.315	2.316	2.316
		(AC-FT) 37.	37.	37.	37.

CUMULATIVE AREA = 0.30 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.15	1.56	1.45	416.67	913.69	66.38	2.21	5.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3510E+02 EXCESS=0.0000E+00 OUTFLOW=0.3519E+02 BASIN STORAGE=0.1735E-03 PERCENT ERROR=-0.3

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.15 1.56 3.00 911.34 66.00 2.21

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

HYDROGRAPH AT STATION R8-9
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 911.	1.10	71.	18.	9.	9.
		(INCHES) 2.212	2.214	2.214	2.214
		(AC-FT) 35.	35.	35.	35.

CUMULATIVE AREA = 0.30 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.15	1.56	1.45	416.67	913.69	66.38	2.21	5.40

Onsite_6hr.out

MAIN 0.15 1.56 1.48 416.67 772.14 65.64 2.03 5.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3216E+02 EXCESS=0.0000E+00 OUTFLOW=0.3228E+02 BASIN STORAGE=0.1954E-03 PERCENT ERROR=-0.4

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.15 1.56 3.00 769.23 66.00 2.03

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HYDROGRAPH AT STATION R8-9
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
769.	1.10	65.	16.	8.	8.
		(INCHES) 2.031	2.033	2.033	2.033
		(AC-FT) 32.	32.	32.	32.

CUMULATIVE AREA = 0.30 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.15	1.56	1.59	416.67	554.15	67.90	1.68	4.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2666E+02 EXCESS=0.0000E+00 OUTFLOW=0.2676E+02 BASIN STORAGE=0.1898E-03 PERCENT ERROR=-0.4

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 0.15 1.56 3.00 554.05 69.00 1.68

*** **

HYDROGRAPH AT STATION R8-9
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
554.	1.15	54.	13.	6.	6.
		(INCHES) 1.682	1.684	1.684	1.684
		(AC-FT) 27.	27.	27.	27.

CUMULATIVE AREA = 0.30 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT R8-9

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1010.	1.10	74.	19.	9.	9.
		(INCHES) 2.315	2.316	2.316	2.316
		(AC-FT) 37.	37.	37.	37.

CUMULATIVE AREA = 0.30 SQ MI

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161 KK * SB09 * BASIN
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SUBBASIN RUNOFF DATA

162 BA SUBBASIN CHARACTERISTICS
TAREA 0.05 SUBBASIN AREA

163 LG GREEN AND AMPT LOSS RATE
STRTL 0.15 STARTING LOSS
DTH 0.25 MOISTURE DEFICIT
PSIF 4.00 WETTING FRONT SUCTION
XKSAT 0.61 HYDRAULIC CONDUCTIVITY
RTIMP 55.00 PERCENT IMPERVIOUS AREA

164 UC CLARK UNITGRAPH
TC 0.25 TIME OF CONCENTRATION
R 0.23 STORAGE COEFFICIENT

165 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
100.0

UNIT HYDROGRAPH PARAMETERS
CLARK TC= 0.25 HR, R= 0.23 HR
SNYDER TP= 0.15 HR, CP= 0.42

UNIT HYDROGRAPH
27 END-OF-PERIOD ORDINATES
11. 51. 86. 89. 82. 70. 56. 45. 36. 29.
23. 19. 15. 12. 10. 8. 6. 5. 4. 3.
3. 2. 2. 1. 1. 1. 1.

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HYDROGRAPH AT STATION SB09
TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.47, TOTAL EXCESS = 2.29

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		
+	174.	0.95	13.	3.	2.
			(INCHES)	2.280	2.280
			(AC-FT)	6.	6.

CUMULATIVE AREA = 0.05 SQ MI

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HYDROGRAPH AT STATION SB09
TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.27

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		
+	173.	0.95	13.	3.	2.
			(INCHES)	2.264	2.264
			(AC-FT)	6.	6.

CUMULATIVE AREA = 0.05 SQ MI

*** **

HYDROGRAPH AT STATION SB09
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.51, TOTAL EXCESS = 2.18

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		
+	153.	0.95	12.	3.	1.
			(INCHES)	2.168	2.168
			(AC-FT)	6.	6.

CUMULATIVE AREA = 0.05 SQ MI

*** **

HYDROGRAPH AT STATION SB09
TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.55, TOTAL EXCESS = 1.99

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(HR)			
+					

		(CFS)				
+	127.	0.95	11.	3.	1.	1.
		(INCHES)	1.978	1.978	1.978	1.978
		(AC-FT)	5.	5.	5.	5.
		CUMULATIVE AREA =	0.05 SQ MI			

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HYDROGRAPH AT STATION SB09
 TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.58, TOTAL EXCESS = 1.65

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	96.	0.95	9.	2.	1.	1.
		(INCHES)	1.642	1.642	1.642	1.642
		(AC-FT)	5.	5.	5.	5.

CUMULATIVE AREA = 0.05 SQ MI

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INTERPOLATED HYDROGRAPH AT SB09

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	173.	0.95	13.	3.	2.	2.
		(INCHES)	2.269	2.269	2.269	2.269
		(AC-FT)	6.	6.	6.	6.

CUMULATIVE AREA = 0.05 SQ MI

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 167 KK * CP-9 * COMBINE
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 SR 101L FREEWAY AND BASIN 53R (HAYDEN ROAD NORTH CHANNEL)

169 HC HYDROGRAPH COMBINATION
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION CP-9
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1127.	1.10	87.	22.	11.	11.
		(INCHES)	2.322	2.323	2.323	2.323
		(AC-FT)	43.	43.	43.	43.

CUMULATIVE AREA = 0.35 SQ MI

*** **

HYDROGRAPH AT STATION CP-9
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1124.	1.10	87.	22.	10.	10.
		(INCHES)	2.307	2.308	2.308	2.308
		(AC-FT)	43.	43.	43.	43.

CUMULATIVE AREA = 0.35 SQ MI

*** **

HYDROGRAPH AT STATION CP-9
TRANSPPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1023.	1.10	83.	21.	10.	10.
		(INCHES) 2.206	2.207	2.207	2.207
		(AC-FT) 41.	41.	41.	41.
CUMULATIVE AREA =		0.35 SQ MI			

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HYDROGRAPH AT STATION CP-9
TRANSPPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
869.	1.10	76.	19.	9.	9.
		(INCHES) 2.023	2.024	2.025	2.025
		(AC-FT) 38.	38.	38.	38.
CUMULATIVE AREA =		0.35 SQ MI			

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HYDROGRAPH AT STATION CP-9
TRANSPPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
622.	1.15	63.	16.	8.	8.
		(INCHES) 1.676	1.678	1.678	1.678
		(AC-FT) 31.	31.	31.	31.
CUMULATIVE AREA =		0.35 SQ MI			

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INTERPOLATED HYDROGRAPH AT CP-9

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1124.	1.10	87.	22.	10.	10.
		(INCHES) 2.307	2.309	2.309	2.309
		(AC-FT) 43.	43.	43.	43.
CUMULATIVE AREA =		0.35 SQ MI			

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170 KK

* PIMACH *
* *

PIMA ROAD CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS
100-YR, 6-HR FLO-2D MODEL (XS 183)

SUBBASIN RUNOFF DATA

173 BA SUBBASIN CHARACTERISTICS
TAREA 12.30 SUBBASIN AREA

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HYDROGRAPH AT STATION PIMACH
TRANSPPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
4017.	5.50	1092.	292.	146.	146.
		(INCHES) 0.825	0.884	0.919	0.919

(AC-FT) 541. 580. Onsite_6hr.out 603. 603.
 CUMULATIVE AREA = 12.30 SQ MI

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HYDROGRAPH AT STATION PIMACH
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 4017.	5.50	(CFS) 1092.	292.	146.	146.
		(INCHES) 0.825	0.884	0.919	0.919
		(AC-FT) 541.	580.	603.	603.

CUMULATIVE AREA = 12.30 SQ MI

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HYDROGRAPH AT STATION PIMACH
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 4017.	5.50	(CFS) 1092.	292.	146.	146.
		(INCHES) 0.825	0.884	0.919	0.919
		(AC-FT) 541.	580.	603.	603.

CUMULATIVE AREA = 12.30 SQ MI

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HYDROGRAPH AT STATION PIMACH
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 4017.	5.50	(CFS) 1092.	292.	146.	146.
		(INCHES) 0.825	0.884	0.919	0.919
		(AC-FT) 541.	580.	603.	603.

CUMULATIVE AREA = 12.30 SQ MI

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HYDROGRAPH AT STATION PIMACH
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 4017.	5.50	(CFS) 1092.	292.	146.	146.
		(INCHES) 0.825	0.884	0.919	0.919
		(AC-FT) 541.	580.	603.	603.

CUMULATIVE AREA = 12.30 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT PIMACH

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 4017.	5.50	(CFS) 1092.	292.	146.	146.
		(INCHES) 0.825	0.884	0.919	0.919
		(AC-FT) 541.	580.	603.	603.

CUMULATIVE AREA = 12.30 SQ MI

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 211 KK * PIMAIN *

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BYPASS ALONG SE SIDE OF BASIN 53R TO ADOT CULVERT NEAR UNION HILLS DR

DT	DIVERSION				
	ISTAD	PIMABY	DIVERSION	HYDROGRAPH	IDENTIFICATION
DI	INFLOW	0.00	1000.00	10000.00	
DQ	DIVERTED FLOW	0.00	1000.00	1000.00	

DIVERSION HYDROGRAPH	PIMABY
TRANSPPOSITION AREA	0.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(CFS)			49.95-HR
+	1000.	4.95	605.	171.	88.
		(INCHES)	0.458	0.516	0.551
		(AC-FT)	300.	338.	361.

CUMULATIVE AREA = 12.30 SQ MI

HYDROGRAPH AT STATION	PIMAIN
TRANSPPOSITION AREA	0.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(CFS)			49.95-HR
+	3017.	5.50	486.	122.	58.
		(INCHES)	0.368	0.368	0.368
		(AC-FT)	241.	241.	241.

CUMULATIVE AREA = 12.30 SQ MI

DIVERSION HYDROGRAPH	PIMABY
TRANSPPOSITION AREA	0.5 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(CFS)			49.95-HR
+	1000.	4.95	605.	171.	88.
		(INCHES)	0.458	0.516	0.551
		(AC-FT)	300.	338.	361.

CUMULATIVE AREA = 12.30 SQ MI

HYDROGRAPH AT STATION	PIMAIN
TRANSPPOSITION AREA	0.5 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(CFS)			49.95-HR
+	3017.	5.50	486.	122.	58.
		(INCHES)	0.368	0.368	0.368
		(AC-FT)	241.	241.	241.

CUMULATIVE AREA = 12.30 SQ MI

DIVERSION HYDROGRAPH	PIMABY
TRANSPPOSITION AREA	2.8 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+	(CFS)	(CFS)			49.95-HR
+	1000.	4.95	605.	171.	88.
		(INCHES)	0.458	0.516	0.551
		(AC-FT)	300.	338.	361.

CUMULATIVE AREA = 12.30 SQ MI

HYDROGRAPH AT STATION PIMAIN
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
3017.	5.50	(CFS)	486.	122.	58.	58.
		(INCHES)	0.368	0.368	0.368	0.368
		(AC-FT)	241.	241.	241.	241.
CUMULATIVE AREA = 12.30 SQ MI						

*** **

DIVERSION HYDROGRAPH PIMABY
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1000.	4.95	(CFS)	605.	171.	88.	88.
		(INCHES)	0.458	0.516	0.551	0.551
		(AC-FT)	300.	338.	361.	361.
CUMULATIVE AREA = 12.30 SQ MI						

*** **

HYDROGRAPH AT STATION PIMAIN
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
3017.	5.50	(CFS)	486.	122.	58.	58.
		(INCHES)	0.368	0.368	0.368	0.368
		(AC-FT)	241.	241.	241.	241.
CUMULATIVE AREA = 12.30 SQ MI						

*** **

DIVERSION HYDROGRAPH PIMABY
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1000.	4.95	(CFS)	605.	171.	88.	88.
		(INCHES)	0.458	0.516	0.551	0.551
		(AC-FT)	300.	338.	361.	361.
CUMULATIVE AREA = 12.30 SQ MI						

*** **

HYDROGRAPH AT STATION PIMAIN
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
3017.	5.50	(CFS)	486.	122.	58.	58.
		(INCHES)	0.368	0.368	0.368	0.368
		(AC-FT)	241.	241.	241.	241.
CUMULATIVE AREA = 12.30 SQ MI						

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INTERPOLATED DIVERSION HYDROGRAPH AT PIMABY

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
1000.	4.95	(CFS)	605.	171.	88.	88.
		(INCHES)	0.458	0.516	0.551	0.551
		(AC-FT)	300.	338.	361.	361.
CUMULATIVE AREA = 12.30 SQ MI						

*** **

INTERPOLATED HYDROGRAPH AT PIMAIN

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
3017.	5.50	486.	122.	58.	58.
		(INCHES) 0.368	0.368	0.368	0.368
		(AC-FT) 241.	241.	241.	241.

CUMULATIVE AREA = 12.30 SQ MI

*** **

 *
 216 KK * PWRCH *
 *

POWERLINE CHANNEL HYDROGRAPH FROM FLO-2D
100-YR, 6-HR FLO-2D MODEL (XS 107)

SUBBASIN RUNOFF DATA

219 BA SUBBASIN CHARACTERISTICS
 TAREA 7.00 SUBBASIN AREA

*** **

HYDROGRAPH AT STATION PWRCH
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
740.	5.80	432.	136.	75.	75.
		(INCHES) 0.574	0.724	0.826	0.826
		(AC-FT) 214.	270.	308.	308.

CUMULATIVE AREA = 7.00 SQ MI

*** **

HYDROGRAPH AT STATION PWRCH
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
740.	5.80	432.	136.	75.	75.
		(INCHES) 0.574	0.724	0.826	0.826
		(AC-FT) 214.	270.	308.	308.

CUMULATIVE AREA = 7.00 SQ MI

*** **

HYDROGRAPH AT STATION PWRCH
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
740.	5.80	432.	136.	75.	75.
		(INCHES) 0.574	0.724	0.826	0.826
		(AC-FT) 214.	270.	308.	308.

CUMULATIVE AREA = 7.00 SQ MI

*** **

HYDROGRAPH AT STATION PWRCH
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR

		(CFS)				
+	740.	5.80	432.	136.	75.	75.
		(INCHES)	0.574	0.724	0.826	0.826
		(AC-FT)	214.	270.	308.	308.
		CUMULATIVE AREA =	7.00 SQ MI			

*** **

HYDROGRAPH AT STATION PWRCH
TRANSPPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	740.	5.80	432.	136.	75.	75.
		(INCHES)	0.574	0.724	0.826	0.826
		(AC-FT)	214.	270.	308.	308.
		CUMULATIVE AREA =	7.00 SQ MI			

*** **

INTERPOLATED HYDROGRAPH AT PWRCH

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	740.	5.80	432.	136.	75.	75.
		(INCHES)	0.574	0.724	0.826	0.826
		(AC-FT)	214.	270.	308.	308.
		CUMULATIVE AREA =	7.00 SQ MI			

*** **

*
257 KK * BINFLO *
*

TOTAL INFLOW INTO BASIN 53R.

259 HC HYDROGRAPH COMBINATION
ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

*** **

HYDROGRAPH AT STATION BINFLO
TRANSPPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	3634.	5.50	919.	277.	144.	144.
		(INCHES)	0.435	0.523	0.566	0.566
		(AC-FT)	456.	549.	593.	593.
		CUMULATIVE AREA =	19.65 SQ MI			

*** **

HYDROGRAPH AT STATION BINFLO
TRANSPPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)				
		(CFS)				
+	3634.	5.50	919.	276.	144.	144.
		(INCHES)	0.435	0.523	0.565	0.565
		(AC-FT)	456.	548.	593.	593.
		CUMULATIVE AREA =	19.65 SQ MI			

*** **

HYDROGRAPH AT STATION BINFLO
TRANSPPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
3634.	5.50	(CFS)	919.	275.	143.	143.
		(INCHES)	0.435	0.521	0.564	0.564
		(AC-FT)	456.	546.	591.	591.

CUMULATIVE AREA = 19.65 SQ MI

*** **

HYDROGRAPH AT STATION BINFLO
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
3634.	5.50	(CFS)	919.	274.	142.	142.
		(INCHES)	0.435	0.518	0.560	0.560
		(AC-FT)	456.	543.	587.	587.

CUMULATIVE AREA = 19.65 SQ MI

*** **

HYDROGRAPH AT STATION BINFLO
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
3634.	5.50	(CFS)	919.	270.	141.	141.
		(INCHES)	0.435	0.512	0.554	0.554
		(AC-FT)	456.	536.	581.	581.

CUMULATIVE AREA = 19.65 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT BINFLO

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
3634.	5.50	(CFS)	919.	273.	142.	142.
		(INCHES)	0.435	0.517	0.560	0.560
		(AC-FT)	456.	542.	587.	587.

CUMULATIVE AREA = 19.65 SQ MI

*** **

* *
260 KK * BASIN *
* *

BASIN STAGE/STORAGE FROM PROPOSED CONTOURS BETWEEN
ELEV 1594 AND 1615; BASIN SIDE SLOPES STEEPENED TO 3:1
OUTFLOW RATING CURVE FROM CULVERTMASTER FOR 2-60" PIPES
THE OUTLET PIPES ARE INLET CONTROLLED.

HYDROGRAPH ROUTING DATA

265 RS	STORAGE ROUTING		1	NUMBER OF SUBREACHES						
	NSTPS		STOR	TYPE OF INITIAL CONDITION						
	ITYP		0.00	INITIAL CONDITION						
	RSVRIC		0.00	WORKING R AND D COEFFICIENT						
	X									
266 SV	STORAGE	0.0	44.9	76.8	108.7	140.6	171.5	202.5	233.5	264.5
295.5		328.7	362.0	395.2	428.5	461.7	497.2	532.7	568.3	603.8
639.3										
268 SE	ELEVATION	1594.00	1597.00	1598.00	1599.00	1600.00	1601.00	1602.00	1603.00	1604.00
1605.00		1606.00	1607.00	1608.00	1609.00	1610.00	1611.00	1612.00	1613.00	1614.00
1615.00										

270 SQ	DISCHARGE	0.	95.	153.	210.	244.	265.	284.	303.	320.
337.										
477.		353.	369.	384.	398.	412.	426.	439.	452.	465.

Onsite_6hr.out

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

HYDROGRAPH AT STATION BASIN
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)		6-HR	24-HR	72-HR
		(CFS)			49.95-HR
+ 363.	8.30	355.	250.	141.	141.
		(INCHES)	0.168	0.474	0.556
		(AC-FT)	176.	496.	582.
				582.	582.
PEAK STORAGE	TIME			MAXIMUM AVERAGE STORAGE	
+ (AC-FT)	(HR)		6-HR	24-HR	72-HR
					49.95-HR
+ 351.	8.30	332.	189.	101.	101.
PEAK STAGE	TIME			MAXIMUM AVERAGE STAGE	
+ (FEET)	(HR)		6-HR	24-HR	72-HR
					49.95-HR
+ 1606.68	8.30	1606.11	1601.55	1598.29	1598.29
		CUMULATIVE AREA =	19.65 SQ MI		

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

HYDROGRAPH AT STATION BASIN
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)		6-HR	24-HR	72-HR
		(CFS)			49.95-HR
+ 363.	8.30	355.	250.	141.	141.
		(INCHES)	0.168	0.474	0.555
		(AC-FT)	176.	496.	582.
				582.	582.
PEAK STORAGE	TIME			MAXIMUM AVERAGE STORAGE	
+ (AC-FT)	(HR)		6-HR	24-HR	72-HR
					49.95-HR
+ 351.	8.30	332.	189.	100.	100.
PEAK STAGE	TIME			MAXIMUM AVERAGE STAGE	
+ (FEET)	(HR)		6-HR	24-HR	72-HR
					49.95-HR
+ 1606.67	8.30	1606.11	1601.55	1598.28	1598.28
		CUMULATIVE AREA =	19.65 SQ MI		

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

HYDROGRAPH AT STATION BASIN
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)		6-HR	24-HR	72-HR
		(CFS)			49.95-HR
+ 363.	8.30	354.	250.	141.	141.
		(INCHES)	0.168	0.473	0.553
		(AC-FT)	176.	495.	580.
				580.	580.
PEAK STORAGE	TIME			MAXIMUM AVERAGE STORAGE	
+ (AC-FT)	(HR)		6-HR	24-HR	72-HR
					49.95-HR
+ 350.	8.30	331.	188.	100.	100.
PEAK STAGE	TIME			MAXIMUM AVERAGE STAGE	
+ (FEET)	(HR)		6-HR	24-HR	72-HR
					49.95-HR
+ 1606.65	8.30	1606.08	1601.53	1598.27	1598.27
		CUMULATIVE AREA =	19.65 SQ MI		

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

HYDROGRAPH AT STATION BASIN
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME			MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)		6-HR	24-HR	72-HR
		(CFS)			49.95-HR

					Onsite_6hr.out	
+	362.	8.30	353.	249.	140.	140.
			(INCHES) 0.167	0.471	0.550	0.550
			(AC-FT) 175.	494.	577.	577.

PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE	STORAGE	49.95-HR
+	(AC-FT)	(HR)		24-HR	72-HR	
	349.	8.35	330.	187.	99.	99.

PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE	STAGE	49.95-HR
+	(FEET)	(HR)		24-HR	72-HR	
	1606.61	8.30	1606.04	1601.50	1598.24	1598.24

CUMULATIVE AREA = 19.65 SQ MI

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

HYDROGRAPH AT STATION BASIN
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE	FLOW	49.95-HR
+	(CFS)	(HR)		24-HR	72-HR	
	361.	8.35	352.	247.	138.	138.

			(INCHES) 0.167	0.468	0.544	0.544
			(AC-FT) 175.	491.	570.	570.

PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE	STORAGE	49.95-HR
+	(AC-FT)	(HR)		24-HR	72-HR	
	346.	8.35	327.	185.	98.	98.

PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE	STAGE	49.95-HR
+	(FEET)	(HR)		24-HR	72-HR	
	1606.52	8.35	1605.96	1601.44	1598.18	1598.18

CUMULATIVE AREA = 19.65 SQ MI

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

INTERPOLATED HYDROGRAPH AT BASIN

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE	FLOW	49.95-HR
+	(CFS)	(HR)		24-HR	72-HR	
	362.	8.30	353.	249.	140.	140.

			(INCHES) 0.167	0.471	0.550	0.550
			(AC-FT) 175.	493.	576.	576.

CUMULATIVE AREA = 19.65 SQ MI

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*
272 KK * BSNRT1 *
*

2-60" CMP OULFLOW PIPES FOR BASIN 53R UNDER SR 101L FREEWAY.
DOWNSTREAM CONNECTING PIPES ARE 60-INCH RCP AND WILL HAVE
EXCESS CAPACITY.

HYDROGRAPH ROUTING DATA

276 RK KINEMATIC WAVE STREAM ROUTING

L	550.	CHANNEL LENGTH
S	0.0052	SLOPE
N	0.024	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	CIRC	CHANNEL SHAPE
WD	7.00	BOTTOM WIDTH OR DIAMETER
Z	0.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

CUMULATIVE AREA = 19.65 SQ MI

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	3.34	1.25	0.29	183.33	363.42	498.84	0.56	10.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5819E+03 EXCESS=0.0000E+00 OUTFLOW=0.5819E+03 BASIN STORAGE=0.3289E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	3.34	1.25	3.00	363.42	501.00	0.56
***	***	***	***	***		

HYDROGRAPH AT STATION BSNRT1
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
363.	8.35	355.	250.	141.	141.
		(CFS)			
		(INCHES)	0.168	0.474	0.555
		(AC-FT)	176.	496.	582.

CUMULATIVE AREA = 19.65 SQ MI

Onsite_6hr.out
 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	3.34	1.25	0.45	183.33	363.06	498.87	0.55	10.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5801E+03 EXCESS=0.0000E+00 OUTFLOW=0.5800E+03 BASIN STORAGE=0.3288E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	3.34	1.25	3.00	363.06	501.00	0.55
***	***	***	***	***		

HYDROGRAPH AT STATION BSNRT1
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR (CFS)	72-HR (CFS)	49.95-HR (CFS)
363.	8.35	354.	250.	141.	141.
		(INCHES) 0.168	0.473	0.553	0.553
		(AC-FT) 176.	495.	580.	580.

CUMULATIVE AREA = 19.65 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	3.34	1.25	0.38	183.33	362.38	500.88	0.55	10.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5767E+03 EXCESS=0.0000E+00 OUTFLOW=0.5766E+03 BASIN STORAGE=0.3287E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	3.34	1.25	3.00	362.38	501.00	0.55
***	***	***	***	***		

HYDROGRAPH AT STATION BSNRT1
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR (CFS)	72-HR (CFS)	49.95-HR (CFS)
362.	8.35	353.	249.	140.	140.
		(INCHES) 0.167	0.471	0.550	0.550
		(AC-FT) 175.	494.	577.	577.

CUMULATIVE AREA = 19.65 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	3.34	1.25	0.34	183.33	361.10	501.33	0.54	10.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5702E+03 EXCESS=0.0000E+00 OUTFLOW=0.5702E+03 BASIN STORAGE=0.3284E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	3.34	1.25	3.00	361.10	501.00	0.54
***	***	***	***	***		

HYDROGRAPH AT STATION BSNRT1
 TRANSPOSITION AREA 90.0 SQ MI

Onsite_6hr.out

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
361.	8.35	(CFS)	352.	248.	138.	138.
		(INCHES)	0.167	0.468	0.544	0.544
		(AC-FT)	175.	491.	570.	570.
CUMULATIVE AREA =			19.65 SQ MI			
***	***	***	***	***	***	***

INTERPOLATED HYDROGRAPH AT BSNRT1

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
362.	8.35	(CFS)	353.	249.	140.	140.
		(INCHES)	0.167	0.471	0.549	0.549
		(AC-FT)	175.	494.	576.	576.
CUMULATIVE AREA =			19.65 SQ MI			

*** **

277 KK

* BSNRT2 *

2-60" RCP PIPES FROM SR 101L FREEWAY TO UNION HILLS DR (BASIN 53R OUTFAL

HYDROGRAPH ROUTING DATA

279 RK KINEMATIC WAVE STREAM ROUTING

L	1200.	CHANNEL LENGTH
S	0.0077	SLOPE
N	0.013	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	CIRC	CHANNEL SHAPE
WD	7.00	BOTTOM WIDTH OR DIAMETER
Z	0.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	7.51	1.25	0.44	400.00	363.48	501.11	0.56	20.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5822E+03 EXCESS=0.0000E+00 OUTFLOW=0.5821E+03 BASIN STORAGE=0.3756E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	7.51	1.25	3.00	363.48	501.00	0.56
***	***	***	***	***	***	***

HYDROGRAPH AT STATION BSNRT2
TRANSPPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
363.	8.35	(CFS)	355.	250.	141.	141.
		(INCHES)	0.168	0.474	0.555	0.555
		(AC-FT)	176.	496.	582.	582.
CUMULATIVE AREA =			19.65 SQ MI			

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO	VOLUME	MAXIMUM
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	Onsite_6hr.out			PEAK (MIN)	CELERITY (FPS)			
	(MIN)	(FT)	(CFS)					
MAIN	7.51	1.25	0.44	400.00	363.42	501.35	0.56	20.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5819E+03 EXCESS=0.0000E+00 OUTFLOW=0.5818E+03 BASIN STORAGE=0.3756E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	7.51	1.25	3.00	363.42	501.00	0.56
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HYDROGRAPH AT STATION BSNRT2
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
363.	8.35	355.	250.	141.	141.
		(INCHES) 0.168	0.474	0.555	0.555
		(AC-FT) 176.	496.	582.	582.

CUMULATIVE AREA = 19.65 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	7.51	1.25	0.36	400.00	363.06	501.42	0.55	20.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5800E+03 EXCESS=0.0000E+00 OUTFLOW=0.5799E+03 BASIN STORAGE=0.3755E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	7.51	1.25	3.00	363.06	501.00	0.55
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HYDROGRAPH AT STATION BSNRT2
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
363.	8.35	354.	250.	140.	140.
		(INCHES) 0.168	0.473	0.553	0.553
		(AC-FT) 176.	495.	580.	580.

CUMULATIVE AREA = 19.65 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	7.51	1.25	0.48	400.00	362.38	501.44	0.55	20.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5766E+03 EXCESS=0.0000E+00 OUTFLOW=0.5766E+03 BASIN STORAGE=0.3753E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	7.51	1.25	3.00	362.38	501.00	0.55
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HYDROGRAPH AT STATION BSNRT2
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
		(CFS)			

+ 362. 8.35 Onsite_6hr.out
 (INCHES) 353. 249. 140. 140.
 (AC-FT) 0.167 0.471 0.550 0.550
 175. 494. 577. 577.

CUMULATIVE AREA = 19.65 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	7.51	1.25	0.38	400.00	361.10	501.56	0.54	20.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5702E+03 EXCESS=0.0000E+00 OUTFLOW=0.5701E+03 BASIN STORAGE=0.3750E-01 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN 7.51 1.25 3.00 361.09 501.00 0.54
 *** **

HYDROGRAPH AT STATION BSNRT2
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	49.95-HR MAXIMUM AVERAGE FLOW
+ 361.	8.35	352.	248.	138.	138.
		(INCHES) 0.167	0.468	0.544	0.544
		(AC-FT) 175.	491.	570.	570.

CUMULATIVE AREA = 19.65 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT BSNRT2

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	49.95-HR MAXIMUM AVERAGE FLOW
+ 362.	8.35	353.	249.	139.	139.
		(INCHES) 0.167	0.471	0.549	0.549
		(AC-FT) 175.	494.	576.	576.

CUMULATIVE AREA = 19.65 SQ MI

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 * *
 * PIMABY *
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RETRIEVE PIMA BYPASS CHANNEL HYDROGRAPH

282 DR RETRIEVE DIVERSION HYDROGRAPH
 ISTD PIMABY DIVERSION HYDROGRAPH IDENTIFICATION

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HYDROGRAPH AT STATION PIMABY
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR MAXIMUM AVERAGE FLOW	72-HR MAXIMUM AVERAGE FLOW	49.95-HR MAXIMUM AVERAGE FLOW
+ 1000.	4.95	605.	171.	88.	88.
		(INCHES) 0.286	0.323	0.345	0.345
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

*** **

HYDROGRAPH AT STATION PIMABY
TRANSPPOSITION AREA 0.5 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1000.	4.95	605.	171.	88.	88.
		(INCHES) 0.286	0.323	0.345	0.345
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

*** **

HYDROGRAPH AT STATION PIMABY
TRANSPPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1000.	4.95	605.	171.	88.	88.
		(INCHES) 0.286	0.323	0.345	0.345
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

*** **

HYDROGRAPH AT STATION PIMABY
TRANSPPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1000.	4.95	605.	171.	88.	88.
		(INCHES) 0.286	0.323	0.345	0.345
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

*** **

HYDROGRAPH AT STATION PIMABY
TRANSPPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1000.	4.95	605.	171.	88.	88.
		(INCHES) 0.286	0.323	0.345	0.345
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT PIMABY

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1000.	4.95	605.	171.	88.	88.
		(INCHES) 0.458	0.516	0.551	0.551
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

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 * *
 283 KK * PMB-RT *
 * *

UNION HILLS DR CHANNEL FROM SR 101L FREEWAY TO 82ND ST

HYDROGRAPH ROUTING DATA

285 RK KINEMATIC WAVE STREAM ROUTING

Onsite_6hr.out

L	3157.	CHANNEL LENGTH
S	0.0082	SLOPE
N	0.013	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	24.00	BOTTOM WIDTH OR DIAMETER
Z	4.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.87	1.47	0.99	1052.33	1000.00	299.31	0.55	20.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.87	1.47	3.00	1000.00	300.00	0.55
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*** *** *** *** ***

HYDROGRAPH AT STATION PMB-RT
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME	6-HR	24-HR	72-HR	49.95-HR
+ (CFS)	(HR)	(CFS)			
+ 1000.	5.00	605.	171.	87.	87.
		(INCHES)	0.457	0.516	0.551
		(AC-FT)	300.	338.	361.

CUMULATIVE AREA = 12.30 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.87	1.47	0.99	1052.33	1000.00	299.31	0.55	20.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.87	1.47	3.00	1000.00	300.00	0.55
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*** *** *** *** ***

HYDROGRAPH AT STATION PMB-RT
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME	6-HR	24-HR	72-HR	49.95-HR
+ (CFS)	(HR)	(CFS)			
+ 1000.	5.00	605.	171.	87.	87.
		(INCHES)	0.457	0.516	0.551
		(AC-FT)	300.	338.	361.

CUMULATIVE AREA = 12.30 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.87	1.47	0.99	1052.33	1000.00	299.31	0.55	20.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	1.87	1.47	3.00	1000.00	300.00	0.55		
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		PMB-RT						
	TRANSPOSITION AREA		2.8 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR			
+ 1000.	5.00	(CFS)	605.	171.	87.	87.			
		(INCHES)	0.457	0.516	0.551	0.551			
		(AC-FT)	300.	338.	361.	361.			
	CUMULATIVE AREA =		12.30 SQ MI						
	COMPUTED KINEMATIC PARAMETERS								
	VARIABLE TIME STEP								
	(DT SHOWN IS A MINIMUM)								
	ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
				(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
	MAIN	1.87	1.47	0.99	1052.33	1000.00	299.31	0.55	20.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	1.87	1.47	3.00	1000.00	300.00	0.55		
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		PMB-RT						
	TRANSPOSITION AREA		16.0 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR			
+ 1000.	5.00	(CFS)	605.	171.	87.	87.			
		(INCHES)	0.457	0.516	0.551	0.551			
		(AC-FT)	300.	338.	361.	361.			
	CUMULATIVE AREA =		12.30 SQ MI						
	COMPUTED KINEMATIC PARAMETERS								
	VARIABLE TIME STEP								
	(DT SHOWN IS A MINIMUM)								
	ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
				(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
	MAIN	1.87	1.47	0.99	1052.33	1000.00	299.31	0.55	20.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

	MAIN	1.87	1.47	3.00	1000.00	300.00	0.55		
***	***	***	***	***	***				
	HYDROGRAPH AT STATION		PMB-RT						
	TRANSPOSITION AREA		90.0 SQ MI						
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW						
+ (CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR			
+ 1000.	5.00	(CFS)	605.	171.	87.	87.			
		(INCHES)	0.457	0.516	0.551	0.551			
		(AC-FT)	300.	338.	361.	361.			
	CUMULATIVE AREA =		12.30 SQ MI						
***	***	***	***	***	***				

INTERPOLATED HYDROGRAPH AT PMB-RT

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1000.	5.00	605.	171.	87.	87.
		(INCHES) 0.457	0.516	0.551	0.551
		(AC-FT) 300.	338.	361.	361.

CUMULATIVE AREA = 12.30 SQ MI

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 286 KK * SB10 * BASIN
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SUBBASIN RUNOFF DATA

287 BA SUBBASIN CHARACTERISTICS
 TAREA 0.04 SUBBASIN AREA

288 LG GREEN AND AMPT LOSS RATE
 STRTL 0.15 STARTING LOSS
 DTH 0.25 MOISTURE DEFICIT
 PSIF 4.25 WETTING FRONT SUCTION
 XKSAT 0.55 HYDRAULIC CONDUCTIVITY
 RTIMP 55.00 PERCENT IMPERVIOUS AREA

289 UC CLARK UNITGRAPH
 TC 0.23 TIME OF CONCENTRATION
 R 0.16 STORAGE COEFFICIENT

290 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
 0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 100.0

UNIT HYDROGRAPH PARAMETERS
 CLARK TC= 0.23 HR, R= 0.16 HR
 SNYDER TP= 0.14 HR, CP= 0.51

UNIT HYDROGRAPH
 19 END-OF-PERIOD ORDINATES
 13. 58. 90. 85. 71. 54. 40. 29. 21. 15.
 11. 8. 6. 4. 3. 2. 2. 1. 1.

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HYDROGRAPH AT STATION SB10
 TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.30

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
170.	0.90	10.	2.	1.	1.
		(INCHES) 2.287	2.287	2.287	2.287
		(AC-FT) 5.	5.	5.	5.

CUMULATIVE AREA = 0.04 SQ MI

*** **

HYDROGRAPH AT STATION SB10
 TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.28

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
169.	0.90	10.	2.	1.	1.
		(INCHES) 2.272	2.272	2.272	2.272
		(AC-FT) 5.	5.	5.	5.

CUMULATIVE AREA = 0.04 SQ MI

*** **

HYDROGRAPH AT STATION SB10
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.50, TOTAL EXCESS = 2.19

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
+ 142.	0.95	(CFS)	9.	2.	1.	1.
		(INCHES)	2.179	2.179	2.179	2.179
		(AC-FT)	5.	5.	5.	5.

CUMULATIVE AREA = 0.04 SQ MI

*** **

HYDROGRAPH AT STATION SB10
TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.54, TOTAL EXCESS = 2.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
+ 118.	0.95	(CFS)	9.	2.	1.	1.
		(INCHES)	1.990	1.990	1.990	1.990
		(AC-FT)	4.	4.	4.	4.

CUMULATIVE AREA = 0.04 SQ MI

*** **

HYDROGRAPH AT STATION SB10
TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.57, TOTAL EXCESS = 1.66

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
+ 88.	0.95	(CFS)	7.	2.	1.	1.
		(INCHES)	1.655	1.655	1.655	1.655
		(AC-FT)	4.	4.	4.	4.

CUMULATIVE AREA = 0.04 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT SB10

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR
+ 169.	0.90	(CFS)	10.	2.	1.	1.
		(INCHES)	2.276	2.276	2.276	2.276
		(AC-FT)	5.	5.	5.	5.

CUMULATIVE AREA = 0.04 SQ MI

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* *
* CP-10 *
* *

UNION HILLS DR AND 82ND ST (UNION HILLS DR CHANNEL)

294 HC HYDROGRAPH COMBINATION
ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

*** **

HYDROGRAPH AT STATION CP-10
TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	49.95-HR

+	(CFS)	(HR)	(CFS)				
+	1355.	6.85	909.	420.	230.	230.	
			(INCHES) 0.429	0.794	0.903	0.903	
			(AC-FT) 451.	834.	948.	948.	

CUMULATIVE AREA = 19.69 SQ MI

*** **

HYDROGRAPH AT STATION CP-10
TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1355.	6.85	909.	420.	230.	230.
			(INCHES) 0.429	0.794	0.903	0.903
			(AC-FT) 451.	834.	948.	948.

CUMULATIVE AREA = 19.69 SQ MI

*** **

HYDROGRAPH AT STATION CP-10
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1355.	6.85	909.	420.	229.	229.
			(INCHES) 0.429	0.793	0.901	0.901
			(AC-FT) 451.	833.	946.	946.

CUMULATIVE AREA = 19.69 SQ MI

*** **

HYDROGRAPH AT STATION CP-10
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1354.	6.85	907.	419.	228.	228.
			(INCHES) 0.429	0.791	0.897	0.897
			(AC-FT) 450.	831.	942.	942.

CUMULATIVE AREA = 19.69 SQ MI

*** **

HYDROGRAPH AT STATION CP-10
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1353.	6.85	905.	417.	226.	226.
			(INCHES) 0.427	0.788	0.890	0.890
			(AC-FT) 449.	828.	935.	935.

CUMULATIVE AREA = 19.69 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT CP-10

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1354.	6.85	907.	419.	228.	228.
			(INCHES) 0.428	0.791	0.896	0.896
			(AC-FT) 450.	831.	941.	941.

CUMULATIVE AREA = 19.69 SQ MI

*** **

 * R10-11 *
 * ROUTE *

UNION HILLS DR CHANNEL FROM 82ND ST TO HAYDEN ROAD

HYDROGRAPH ROUTING DATA

297 RK KINEMATIC WAVE STREAM ROUTING
 L 1277. CHANNEL LENGTH
 S 0.0014 SLOPE
 N 0.030 CHANNEL ROUGHNESS COEFFICIENT
 CA 0.00 CONTRIBUTING AREA
 SHAPE TRAP CHANNEL SHAPE
 WD 220.00 BOTTOM WIDTH OR DIAMETER
 Z 4.00 SIDE SLOPE
 NDXMIN 2 MINIMUM NUMBER OF DX INTERVALS

 COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.06	1.62	1.62	425.67	1355.03	412.64	0.90	4.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9482E+03 EXCESS=0.0000E+00 OUTFLOW=0.9474E+03 BASIN STORAGE=0.9166E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.06	1.62	3.00	1354.77	411.00	0.90
------	------	------	------	---------	--------	------

*** **

HYDROGRAPH AT STATION R10-11
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR (INCHES)	72-HR (AC-FT)	49.95-HR (CFS)
+ 1355.	6.85	909.	0.429	451.	229.
		420.	0.794	834.	229.
		229.	0.902	947.	0.902
		947.			0.902

CUMULATIVE AREA = 19.69 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.06	1.62	1.56	425.67	1354.98	412.72	0.90	4.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9479E+03 EXCESS=0.0000E+00 OUTFLOW=0.9473E+03 BASIN STORAGE=0.9166E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.06	1.62	3.00	1354.72	411.00	0.90
------	------	------	------	---------	--------	------

*** **

HYDROGRAPH AT STATION R10-11
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	24-HR (INCHES)	72-HR (AC-FT)	49.95-HR (CFS)
+ 1355.	6.85	909.	0.429	451.	229.
		420.	0.794	834.	229.
		229.	0.902	947.	0.902
		947.			0.902

CUMULATIVE AREA = 19.69 SQ MI

COMPUTED KINEMATIC PARAMETERS
 VARIABLE TIME STEP
 (DT SHOWN IS A MINIMUM)

Onsite_6hr.out

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.06	1.62	1.57	425.67	1354.58	412.38	0.90	4.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9458E+03 EXCESS=0.0000E+00 OUTFLOW=0.9450E+03 BASIN STORAGE=0.9164E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.06	1.62	3.00		1354.33	411.00	0.90	
------	------	------	------	--	---------	--------	------	--

*** **

HYDROGRAPH AT STATION R10-11
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1354.	6.85	908. (INCHES) (AC-FT) 450.	420. 0.793 833.	229. 0.900 945.	229. 0.900 945.

CUMULATIVE AREA = 19.69 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.06	1.62	1.67	425.67	1353.83	412.54	0.90	4.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9420E+03 EXCESS=0.0000E+00 OUTFLOW=0.9412E+03 BASIN STORAGE=0.9165E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.06	1.62	3.00		1353.59	411.00	0.90	
------	------	------	------	--	---------	--------	------	--

*** **

HYDROGRAPH AT STATION R10-11
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
+ 1354.	6.85	907. (INCHES) (AC-FT) 450.	419. 0.791 831.	228. 0.896 941.	228. 0.896 941.

CUMULATIVE AREA = 19.69 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.06	1.62	1.66	425.67	1352.40	412.19	0.89	4.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9349E+03 EXCESS=0.0000E+00 OUTFLOW=0.9341E+03 BASIN STORAGE=0.9161E+00 PERCENT ERROR=0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.06	1.62	3.00		1352.18	411.00	0.89	
------	------	------	------	--	---------	--------	------	--

*** **

HYDROGRAPH AT STATION R10-11
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR

+	(CFS)	(HR)	(CFS)				
+	1352.	6.85	904.	417.	226.	226.	
			(INCHES) 0.427	0.788	0.889	0.889	
			(AC-FT) 448.	828.	934.	934.	

CUMULATIVE AREA = 19.69 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT R10-11

PEAK FLOW	TIME		MAXIMUM	AVERAGE	FLOW	
			6-HR	24-HR	72-HR	49.95-HR
+	(CFS)	(HR)	(CFS)			
+	1353.	6.85	906.	419.	228.	228.
			(INCHES) 0.428	0.791	0.895	0.895
			(AC-FT) 449.	831.	940.	940.

CUMULATIVE AREA = 19.69 SQ MI

*** **

 * *
 298 KK * SB11 * BASIN
 * *

SUBBASIN RUNOFF DATA

299 BA SUBBASIN CHARACTERISTICS
 TAREA 0.07 SUBBASIN AREA

300 LG GREEN AND AMPT LOSS RATE
 STRTL 0.15 STARTING LOSS
 DTH 0.25 MOISTURE DEFICIT
 PSIF 4.15 WETTING FRONT SUCTION
 XKSAT 0.58 HYDRAULIC CONDUCTIVITY
 RTIMP 55.00 PERCENT IMPERVIOUS AREA

301 UC CLARK UNITGRAPH
 TC 0.29 TIME OF CONCENTRATION
 R 0.23 STORAGE COEFFICIENT

302 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES
 0.0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 100.0

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.29 HR, R= 0.23 HR
 SNYDER TP= 0.19 HR, CP= 0.50

UNIT HYDROGRAPH 27 END-OF-PERIOD ORDINATES

12.	50.	99.	119.	112.	100.	84.	67.	54.	43.
35.	28.	23.	18.	15.	12.	9.	8.	6.	5.
4.	3.	3.	2.	2.	1.	1.			

*** **

HYDROGRAPH AT STATION SB11
 TRANSPOSITION AREA 0.0 SQ MI

TOTAL RAINFALL = 2.76, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.29

PEAK FLOW	TIME		MAXIMUM	AVERAGE	FLOW
			6-HR	24-HR	72-HR
+	(CFS)	(HR)	(CFS)		
+	233.	0.95	17.	4.	2.
			(INCHES) 2.282	2.282	2.282
			(AC-FT) 9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

*** **

HYDROGRAPH AT STATION SB11
 TRANSPOSITION AREA 0.5 SQ MI

TOTAL RAINFALL = 2.74, TOTAL LOSS = 0.46, TOTAL EXCESS = 2.28

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
231.	0.95	(CFS)	17.	4.	2.	2.
		(INCHES)	2.267	2.267	2.267	2.267
		(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

*** **

HYDROGRAPH AT STATION SB11
TRANSPOSITION AREA 2.8 SQ MI

TOTAL RAINFALL = 2.69, TOTAL LOSS = 0.50, TOTAL EXCESS = 2.18

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
201.	1.00	(CFS)	17.	4.	2.	2.
		(INCHES)	2.172	2.172	2.172	2.172
		(AC-FT)	8.	8.	8.	8.

CUMULATIVE AREA = 0.07 SQ MI

*** **

HYDROGRAPH AT STATION SB11
TRANSPOSITION AREA 16.0 SQ MI

TOTAL RAINFALL = 2.54, TOTAL LOSS = 0.55, TOTAL EXCESS = 1.99

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
169.	1.00	(CFS)	15.	4.	2.	2.
		(INCHES)	1.982	1.982	1.982	1.982
		(AC-FT)	8.	8.	8.	8.

CUMULATIVE AREA = 0.07 SQ MI

*** **

HYDROGRAPH AT STATION SB11
TRANSPOSITION AREA 90.0 SQ MI

TOTAL RAINFALL = 2.23, TOTAL LOSS = 0.58, TOTAL EXCESS = 1.65

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
129.	1.00	(CFS)	13.	3.	2.	2.
		(INCHES)	1.647	1.647	1.647	1.647
		(AC-FT)	6.	6.	6.	6.

CUMULATIVE AREA = 0.07 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT SB11

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			49.95-HR
			6-HR	24-HR	72-HR	
231.	0.95	(CFS)	17.	4.	2.	2.
		(INCHES)	2.270	2.270	2.270	2.270
		(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = 0.07 SQ MI

*** **

304 KK * CP-11 * COMBINE
* *

UNION HILLS DR AND HAYDEN ROAD (HAYDEN RD SOUTH CHANNEL)

306 HC HYDROGRAPH COMBINATION
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

*** **

HYDROGRAPH AT STATION CP-11
 TRANSPOSITION AREA 0.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1355.	6.85	909.	420.	232.	232.
		(INCHES) 0.428	0.791	0.907	0.907
		(AC-FT) 451.	834.	956.	956.

CUMULATIVE AREA = 19.76 SQ MI

*** **

HYDROGRAPH AT STATION CP-11
 TRANSPOSITION AREA 0.5 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1355.	6.85	909.	420.	232.	232.
		(INCHES) 0.428	0.791	0.907	0.907
		(AC-FT) 451.	834.	956.	956.

CUMULATIVE AREA = 19.76 SQ MI

*** **

HYDROGRAPH AT STATION CP-11
 TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1354.	6.85	908.	420.	231.	231.
		(INCHES) 0.427	0.790	0.904	0.904
		(AC-FT) 450.	833.	953.	953.

CUMULATIVE AREA = 19.76 SQ MI

*** **

HYDROGRAPH AT STATION CP-11
 TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1354.	6.85	907.	419.	230.	230.
		(INCHES) 0.427	0.789	0.900	0.900
		(AC-FT) 450.	831.	949.	949.

CUMULATIVE AREA = 19.76 SQ MI

*** **

HYDROGRAPH AT STATION CP-11
 TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
1352.	6.85	904.	417.	228.	228.
		(INCHES) 0.425	0.785	0.892	0.892
		(AC-FT) 448.	828.	940.	940.

CUMULATIVE AREA = 19.76 SQ MI

*** **

INTERPOLATED HYDROGRAPH AT CP-11

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.95-HR
		(CFS)			

				Onsite_6hr.out		
+	1353.	6.85	906.	419.	230.	230.
		(INCHES)	0.426	0.788	0.899	0.899
		(AC-FT)	449.	831.	948.	948.

CUMULATIVE AREA = 19.76 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									
+		76THST	51.	4.55	15.	4.	2.	0.24		
+	HYDROGRAPH AT									
+		SB01	324.	0.95	26.	6.	3.	0.11		
+	2 COMBINED AT									
+		CP-1	323.	0.95	37.	11.	5.	0.35		
+	ROUTED TO									
+		R1-2	315.	1.10	37.	11.	5.	0.35		
+	HYDROGRAPH AT									
+		SB02	489.	0.95	38.	10.	5.	0.16		
+	2 COMBINED AT									
+		CP-2	731.	1.05	75.	20.	10.	0.51		
+	ROUTED TO									
+		R2-3	719.	1.10	75.	20.	10.	0.51		
+	HYDROGRAPH AT									
+		SB03	129.	1.00	12.	3.	1.	0.05		
+	2 COMBINED AT									
+		CP-3	828.	1.10	86.	23.	11.	0.56		
+	ROUTED TO									
+		R3-5	806.	1.20	86.	23.	11.	0.56		
+	HYDROGRAPH AT									
+		SB04	525.	0.95	36.	9.	4.	0.14		
+	ROUTED TO									
+		R4-5	511.	1.05	37.	9.	4.	0.14		
+	HYDROGRAPH AT									
+		SB05	399.	0.95	30.	7.	4.	0.13		
+	3 COMBINED AT									
+		CP-5	1410.	1.15	150.	40.	19.	0.83		
+	ROUTED TO									
+		R5-6	1386.	1.20	150.	40.	19.	0.83		
+	HYDROGRAPH AT									
+		SB06	420.	0.95	33.	8.	4.	0.14		
+	2 COMBINED AT									
+		CP-6	1609.	1.20	181.	48.	23.	0.96		
+	HYDROGRAPH AT									
+		SB07	384.	0.90	17.	4.	2.	0.07		
+	ROUTED TO									
+		R7-8	360.	1.05	18.	5.	2.	0.07		
+	HYDROGRAPH AT									
+		SB08	792.	0.95	56.	14.	7.	0.22		
+	2 COMBINED AT									
+		CP-8	1035.	1.05	74.	18.	9.	0.30		
+	ROUTED TO									
+		R8-9	1010.	1.10	74.	19.	9.	0.30		
+	HYDROGRAPH AT									
+		SB09	173.	0.95	13.	3.	2.	0.05		
+	2 COMBINED AT									
+		CP-9	1124.	1.10	87.	22.	10.	0.35		
+	HYDROGRAPH AT									
+		PIMACH	4017.	5.50	1092.	292.	146.	12.30		
+	DIVERSION TO									
+		PIMABY	1000.	4.95	605.	171.	88.	12.30		
+	HYDROGRAPH AT									

				Onsite_6hr.out				
+		PIMAIN	3017.	5.50	486.	122.	58.	12.30
	HYDROGRAPH AT							
+		PWRCH	740.	5.80	432.	136.	75.	7.00
	3 COMBINED AT							
+		BINFLO	3634.	5.50	919.	273.	142.	19.65
	ROUTED TO							
+		BASIN	362.	8.30	353.	249.	140.	19.65
	ROUTED TO							
+		BSNRT1	362.	8.35	353.	249.	140.	19.65
	ROUTED TO							
+		BSNRT2	362.	8.35	353.	249.	139.	19.65
	HYDROGRAPH AT							
+		PIMABY	1000.	4.95	605.	171.	88.	12.30
	ROUTED TO							
+		PMB-RT	1000.	5.00	605.	171.	87.	12.30
	HYDROGRAPH AT							
+		SB10	169.	0.90	10.	2.	1.	0.04
	3 COMBINED AT							
+		CP-10	1354.	6.85	907.	419.	228.	19.69
	ROUTED TO							
+		R10-11	1353.	6.85	906.	419.	228.	19.69
	HYDROGRAPH AT							
+		SB11	231.	0.95	17.	4.	2.	0.07
	2 COMBINED AT							
+		CP-11	1353.	6.85	906.	419.	230.	19.76

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING

(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

INTERPOLATED TO
COMPUTATION INTERVAL

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R1-2	MANE	3.00	324.42	63.63	1.19	3.00	317.42	66.00	1.19
------	------	------	--------	-------	------	------	--------	-------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2221E+02 EXCESS=0.0000E+00 OUTFLOW=0.2234E+02 BASIN STORAGE=0.5560E-01 PERCENT ERROR=-0.8

FOR STORM = 2 STORM AREA (SQ MI) = 0.50

R1-2	MANE	3.00	321.94	63.70	1.18	3.00	314.95	66.00	1.18
------	------	------	--------	-------	------	------	--------	-------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2212E+02 EXCESS=0.0000E+00 OUTFLOW=0.2223E+02 BASIN STORAGE=0.5936E-01 PERCENT ERROR=-0.8

FOR STORM = 3 STORM AREA (SQ MI) = 2.80

R1-2	MANE	3.00	281.88	67.46	1.15	3.00	280.31	66.00	1.15
------	------	------	--------	-------	------	------	--------	-------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2153E+02 EXCESS=0.0000E+00 OUTFLOW=0.2160E+02 BASIN STORAGE=0.5560E-01 PERCENT ERROR=-0.8

-0.6

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R1-2 MANE 3.00 239.43 66.99 1.09 3.00 234.05 69.00 1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2036E+02 EXCESS=0.0000E+00 OUTFLOW=0.2044E+02 BASIN STORAGE=0.5560E-01 PERCENT ERROR=-0.7

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R1-2 MANE 2.91 179.26 70.19 0.98 3.00 178.38 69.00 0.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1834E+02 EXCESS=0.0000E+00 OUTFLOW=0.1842E+02 BASIN STORAGE=0.6416E-01 PERCENT ERROR=-0.8

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R2-3 MANE 1.61 726.00 65.69 1.53 3.00 725.57 66.00 1.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4152E+02 EXCESS=0.0000E+00 OUTFLOW=0.4152E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 R2-3 MANE 1.61 719.73 65.75 1.52 3.00 719.25 66.00 1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4128E+02 EXCESS=0.0000E+00 OUTFLOW=0.4128E+02 BASIN STORAGE=0.4197E-01 PERCENT ERROR=-0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 R2-3 MANE 1.65 650.44 66.16 1.47 3.00 647.31 66.00 1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3985E+02 EXCESS=0.0000E+00 OUTFLOW=0.3986E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.1

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R2-3 MANE 1.61 553.64 68.36 1.37 3.00 550.82 69.00 1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3711E+02 EXCESS=0.0000E+00 OUTFLOW=0.3710E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R2-3 MANE 1.77 421.93 69.46 1.19 3.00 418.11 69.00 1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3232E+02 EXCESS=0.0000E+00 OUTFLOW=0.3234E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR=-0.2

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R3-5 MANE 2.78 817.36 73.14 1.60 3.00 816.94 72.00 1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4741E+02 EXCESS=0.0000E+00 OUTFLOW=0.4763E+02 BASIN STORAGE=0.8222E-01 PERCENT ERROR=-0.6

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 R3-5 MANE 2.79 810.60 70.45 1.59 3.00 810.54 72.00 1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4713E+02 EXCESS=0.0000E+00 OUTFLOW=0.4736E+02 BASIN STORAGE=0.8222E-01 PERCENT ERROR=-0.7

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 R3-5 MANE 2.90 742.52 73.90 1.54 3.00 740.16 72.00 1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4551E+02 EXCESS=0.0000E+00 OUTFLOW=0.4571E+02 BASIN STORAGE=0.8226E-01 PERCENT ERROR=-0.6

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R3-5 MANE 3.00 634.55 73.70 1.43 3.00 626.49 75.00 1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4224E+02 EXCESS=0.0000E+00 OUTFLOW=0.4240E+02 BASIN STORAGE=0.8222E-01 PERCENT ERROR=-0.6

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R3-5 MANE 3.00 478.66 74.64 1.24 3.00 478.05 75.00 1.24

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3665E+02 EXCESS=0.0000E+00 OUTFLOW=0.3688E+02 BASIN STORAGE=0.8233E-01 PERCENT ERROR=-0.8

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R4-5 MANE 2.41 520.58 62.34 2.39 3.00 513.38 63.00 2.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1819E+02 EXCESS=0.0000E+00 OUTFLOW=0.1838E+02 BASIN STORAGE=0.3179E-04 PERCENT ERROR=-1.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50

Onsite_6hr.out

R4-5 MANE 2.42 516.56 62.40 2.38 3.00 510.06 63.00 2.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1807E+02 EXCESS=0.0000E+00 OUTFLOW=0.1825E+02 BASIN STORAGE=0.4744E-04 PERCENT ERROR=-1.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80

R4-5 MANE 2.55 451.64 62.77 2.29 3.00 451.16 63.00 2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1745E+02 EXCESS=0.0000E+00 OUTFLOW=0.1762E+02 BASIN STORAGE=0.4583E-04 PERCENT ERROR=-1.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00

R4-5 MANE 2.73 379.50 64.90 2.12 3.00 374.76 63.00 2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1609E+02 EXCESS=0.0000E+00 OUTFLOW=0.1629E+02 BASIN STORAGE=0.4132E-04 PERCENT ERROR=-1.2

FOR STORM = 5 STORM AREA (SQ MI) = 90.00

R4-5 MANE 2.87 291.80 65.24 1.78 3.00 288.81 66.00 1.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1354E+02 EXCESS=0.0000E+00 OUTFLOW=0.1370E+02 BASIN STORAGE=0.4337E-04 PERCENT ERROR=-1.2

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R5-6 MANE 1.71 1430.15 73.26 1.84 3.00 1428.13 72.00 1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8096E+02 EXCESS=0.0000E+00 OUTFLOW=0.8101E+02 BASIN STORAGE=0.7278E-01 PERCENT ERROR=-0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50

R5-6 MANE 1.72 1417.75 71.63 1.82 3.00 1417.68 72.00 1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8047E+02 EXCESS=0.0000E+00 OUTFLOW=0.8049E+02 BASIN STORAGE=0.7282E-01 PERCENT ERROR=-0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80

R5-6 MANE 1.83 1320.58 72.30 1.76 3.00 1310.29 72.00 1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7757E+02 EXCESS=0.0000E+00 OUTFLOW=0.7762E+02 BASIN STORAGE=0.6818E-01 PERCENT ERROR=-0.2

Onsite_6hr.out

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R5-6 MANE 1.92 1120.07 73.97 1.62 3.00 1117.54 75.00 1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7160E+02 EXCESS=0.0000E+00 OUTFLOW=0.7164E+02 BASIN STORAGE=0.7274E-01 PERCENT ERROR=-0.2

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R5-6 MANE 2.16 837.38 77.35 1.39 3.00 834.70 75.00 1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6127E+02 EXCESS=0.0000E+00 OUTFLOW=0.6143E+02 BASIN STORAGE=0.6818E-01 PERCENT ERROR=-0.4

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R7-8 MANE 2.79 374.54 61.97 2.32 3.00 360.59 63.00 2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8717E+01 EXCESS=0.0000E+00 OUTFLOW=0.9160E+01 BASIN STORAGE=0.1297E-03 PERCENT ERROR=-5.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 R7-8 MANE 2.80 373.06 62.02 2.31 3.00 359.23 63.00 2.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8655E+01 EXCESS=0.0000E+00 OUTFLOW=0.9098E+01 BASIN STORAGE=0.1282E-03 PERCENT ERROR=-5.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 R7-8 MANE 3.00 300.60 62.65 2.18 3.00 299.77 63.00 2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8267E+01 EXCESS=0.0000E+00 OUTFLOW=0.8591E+01 BASIN STORAGE=0.1511E-03 PERCENT ERROR=-3.9

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R7-8 MANE 3.00 243.19 65.55 1.99 3.00 238.95 66.00 2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7502E+01 EXCESS=0.0000E+00 OUTFLOW=0.7866E+01 BASIN STORAGE=0.1118E-03 PERCENT ERROR=-4.8

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R7-8 MANE 2.82 178.83 67.24 1.61 3.00 176.29 66.00 1.61

Onsite_6hr.out

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6168E+01 EXCESS=0.0000E+00 OUTFLOW=0.6362E+01 BASIN STORAGE=0.1260E-03 PERCENT ERROR=-3.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R8-9 MANE 1.32 1031.83 65.57 2.33 3.00 1013.13 66.00 2.33

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3691E+02 EXCESS=0.0000E+00 OUTFLOW=0.3702E+02 BASIN STORAGE=0.1702E-03 PERCENT ERROR=-0.3

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 R8-9 MANE 1.33 1027.12 65.64 2.31 3.00 1010.29 66.00 2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3666E+02 EXCESS=0.0000E+00 OUTFLOW=0.3678E+02 BASIN STORAGE=0.2024E-03 PERCENT ERROR=-0.3

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 R8-9 MANE 1.45 913.69 66.38 2.21 3.00 911.34 66.00 2.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3510E+02 EXCESS=0.0000E+00 OUTFLOW=0.3519E+02 BASIN STORAGE=0.1735E-03 PERCENT ERROR=-0.3

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R8-9 MANE 1.48 772.14 65.64 2.03 3.00 769.23 66.00 2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3216E+02 EXCESS=0.0000E+00 OUTFLOW=0.3228E+02 BASIN STORAGE=0.1954E-03 PERCENT ERROR=-0.4

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R8-9 MANE 1.59 554.15 67.90 1.68 3.00 554.05 69.00 1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2666E+02 EXCESS=0.0000E+00 OUTFLOW=0.2676E+02 BASIN STORAGE=0.1898E-03 PERCENT ERROR=-0.4

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 BSNRT1 MANE 0.29 363.48 498.70 0.56 3.00 363.48 501.00 0.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5822E+03 EXCESS=0.0000E+00 OUTFLOW=0.5822E+03 BASIN STORAGE=0.3289E-01 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 BSNRT1 MANE 0.29 363.42 498.84 0.56 3.00 363.42 501.00 0.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5819E+03 EXCESS=0.0000E+00 OUTFLOW=0.5819E+03 BASIN STORAGE=0.3289E-01 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 BSNRT1 MANE 0.45 363.06 498.87 0.55 3.00 363.06 501.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5801E+03 EXCESS=0.0000E+00 OUTFLOW=0.5800E+03 BASIN STORAGE=0.3288E-01 PERCENT ERROR=0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 BSNRT1 MANE 0.38 362.38 500.88 0.55 3.00 362.38 501.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5767E+03 EXCESS=0.0000E+00 OUTFLOW=0.5766E+03 BASIN STORAGE=0.3287E-01 PERCENT ERROR=0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 BSNRT1 MANE 0.34 361.10 501.33 0.54 3.00 361.10 501.00 0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5702E+03 EXCESS=0.0000E+00 OUTFLOW=0.5702E+03 BASIN STORAGE=0.3284E-01 PERCENT ERROR=0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 BSNRT2 MANE 0.44 363.48 501.11 0.56 3.00 363.48 501.00 0.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5822E+03 EXCESS=0.0000E+00 OUTFLOW=0.5821E+03 BASIN STORAGE=0.3756E-01 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 BSNRT2 MANE 0.44 363.42 501.35 0.56 3.00 363.42 501.00 0.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5819E+03 EXCESS=0.0000E+00 OUTFLOW=0.5818E+03 BASIN STORAGE=0.3756E-01 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 BSNRT2 MANE 0.36 363.06 501.42 0.55 3.00 363.06 501.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5800E+03 EXCESS=0.0000E+00 OUTFLOW=0.5799E+03 BASIN STORAGE=0.3755E-01 PERCENT ERROR=0.0

Onsite_6hr.out

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 BSNRT2 MANE 0.48 362.38 501.44 0.55 3.00 362.38 501.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5766E+03 EXCESS=0.0000E+00 OUTFLOW=0.5766E+03 BASIN STORAGE=0.3753E-01 PERCENT ERROR=0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 BSNRT2 MANE 0.38 361.10 501.56 0.54 3.00 361.09 501.00 0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5702E+03 EXCESS=0.0000E+00 OUTFLOW=0.5701E+03 BASIN STORAGE=0.3750E-01 PERCENT ERROR=0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 PMB-RT MANE 0.99 1000.00 299.31 0.55 3.00 1000.00 300.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 PMB-RT MANE 0.99 1000.00 299.31 0.55 3.00 1000.00 300.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 PMB-RT MANE 0.99 1000.00 299.31 0.55 3.00 1000.00 300.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 PMB-RT MANE 0.99 1000.00 299.31 0.55 3.00 1000.00 300.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 PMB-RT MANE 0.99 1000.00 299.31 0.55 3.00 1000.00 300.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3615E+03 EXCESS=0.0000E+00 OUTFLOW=0.3612E+03 BASIN STORAGE=0.1613E+00 PERCENT ERROR=0.0

0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
 R10-11 MANE 1.62 1355.03 412.64 0.90 3.00 1354.77 411.00 0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9482E+03 EXCESS=0.0000E+00 OUTFLOW=0.9474E+03 BASIN STORAGE=0.9166E+00 PERCENT ERROR=0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
 R10-11 MANE 1.56 1354.98 412.72 0.90 3.00 1354.72 411.00 0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9479E+03 EXCESS=0.0000E+00 OUTFLOW=0.9473E+03 BASIN STORAGE=0.9166E+00 PERCENT ERROR=0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
 R10-11 MANE 1.57 1354.58 412.38 0.90 3.00 1354.33 411.00 0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9458E+03 EXCESS=0.0000E+00 OUTFLOW=0.9450E+03 BASIN STORAGE=0.9164E+00 PERCENT ERROR=0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
 R10-11 MANE 1.67 1353.83 412.54 0.90 3.00 1353.59 411.00 0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9420E+03 EXCESS=0.0000E+00 OUTFLOW=0.9412E+03 BASIN STORAGE=0.9165E+00 PERCENT ERROR=0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
 R10-11 MANE 1.66 1352.40 412.19 0.89 3.00 1352.18 411.00 0.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9349E+03 EXCESS=0.0000E+00 OUTFLOW=0.9341E+03 BASIN STORAGE=0.9161E+00 PERCENT ERROR=0.0

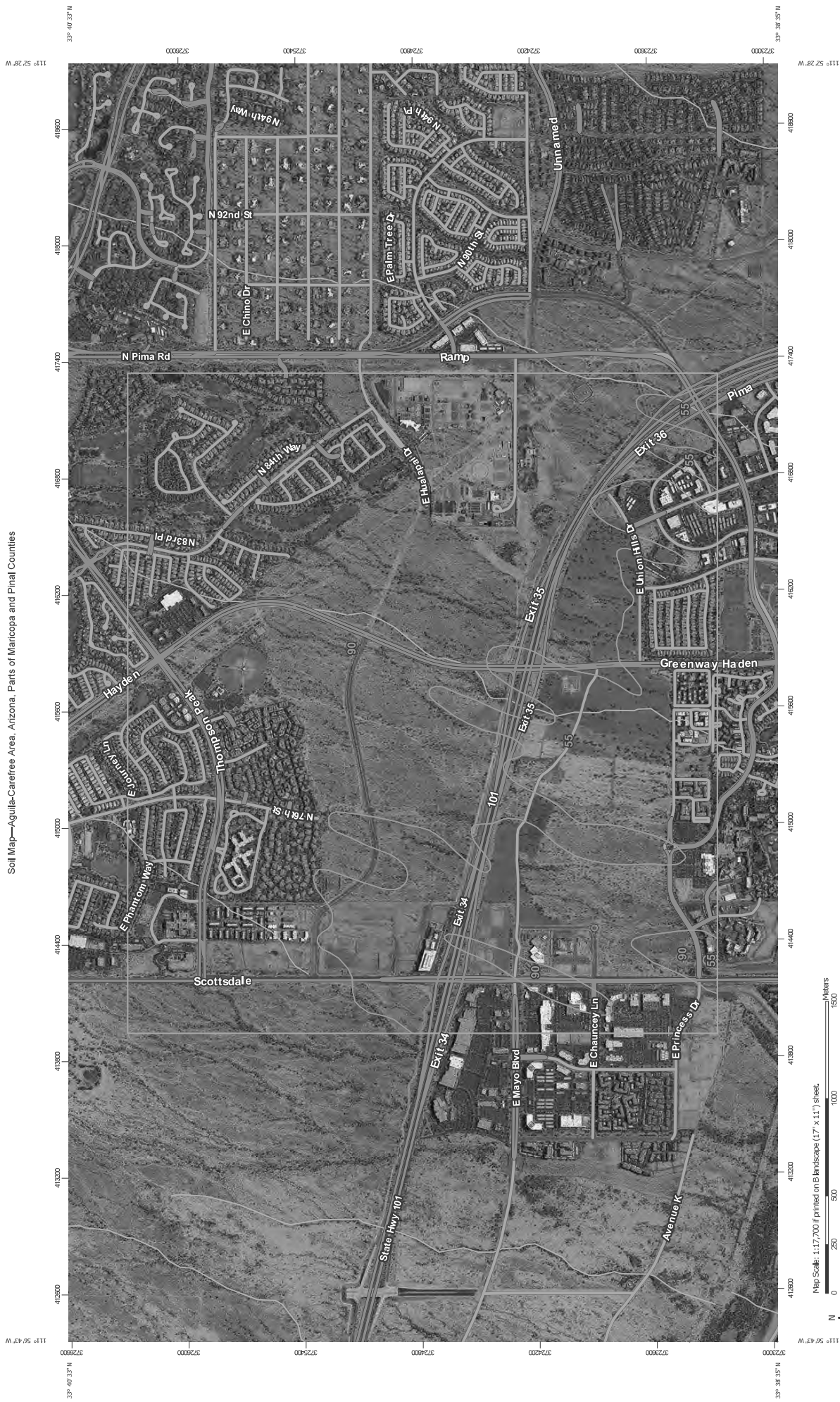
*** NORMAL END OF HEC-1 ***

Appendix C
Cavasson HEC-1 Data
Grayhawk Residences at Cavasson

Flood Control District of Maricopa County
 Drainage Design Management System
RAINFALL DATA
 Project Reference: 17114 - DATA

ID	Method	Duration	2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
DEFAULT	NOAA14	5 MIN	0.258	0.349	0.418	0.511	0.583	0.656
	NOAA14	10 MIN	0.393	0.530	0.636	0.778	0.887	0.998
	NOAA14	15 MIN	0.487	0.658	0.789	0.965	1.099	1.237
	NOAA14	30 MIN	0.656	0.886	1.063	1.299	1.480	1.666
	NOAA14	1 HOUR	0.812	1.096	1.315	1.608	1.832	2.062
	NOAA14	2 HOUR	0.939	1.251	1.490	1.814	2.060	2.315
	NOAA14	3 HOUR	1.024	1.339	1.588	1.936	2.212	2.498
	NOAA14	6 HOUR	1.215	1.549	1.817	2.182	2.465	2.760
	NOAA14	12 HOUR	1.374	1.734	2.016	2.399	2.690	2.993
	NOAA14	24 HOUR	1.622	2.097	2.476	3.005	3.425	3.865

Soil Map—Agulla-Carefree Area, Arizona, Parts of Maricopa and Pinal Counties








































Map Scale: 1:17,700 (prints on B landscape (17" x 11") sheet)
0 250 500 1000 1500 Meters
0 500 1000 2000 3000 Feet
Map Projection: Web Mercator Corner Coordinates: WGS84 Edge Tics: UTM Zone 12N WGS84

Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
Special Point Features	 Special Line Features
 Blowout	Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Aguila-Carefree Area, Arizona, Parts of Maricopa and Pinal Counties
 Survey Area Data: Version 11, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 31, 2014—Dec 7, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
55	Gilman loams	768.3	30.2%
90	Momoli gravelly sandy loam, 1 to 5 percent slopes	1,778.8	69.8%
Totals for Area of Interest		2,547.2	100.0%

Introduction

PROJECT NAME: Cavasson Master Plan Phase 3 Ultimate
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 8/14/2020

The following spreadsheets were used to prepare input data for HEC-1 Green and Ampt Method described in The Drainage Design Manual for Maricopa County

Spreadsheet equations and assumptions were as follows:

SHEET 1: <i>Summary</i>	Summary of HEC-1 Input.
SHEET 2: <i>Basin Geometry</i>	<p>Drainage areas, watercourse length, slope, adjusted slope, land type, and K_b.</p> <p>Slopes were adjusted according to Figure 5.4.</p> <p>Land type and K_b were determined using Table 5.1.</p>
SHEET 3: <i>Green-Ampt Parameters</i>	<p>Soil characteristics, XKSAT, PSIF, DTHETA, and RTEMP.</p> <p>Soil type and percentages determined from Flood Control soils map.</p> <p>XKSAT determined using Appendix A. If applicable a logarithmic weighted value was determined for multiple soils within a basin according to the following equation:</p> $\overline{XSAT} = A \log \sum [\% \text{ SOIL TYPE (IN DECIMAL)} \cdot \text{LOG}(XSAT)]$ <p>Where: XSAT determined from Appendix A</p> <p>PSIF and DTHETA determined using Figure 4.3.</p> <p>RTEMP is a weighted value based on soil data. The following equation was used to determine the weighted value:</p> $RTEMP = \sum \% \text{ SOIL TYPE} \cdot [\% \text{ ROCK OUTCROP (IN DECIMAL)}]$ <p>These values may be used for predeveloped conditions.</p>
SHEET 4: <i>Land Use Parameters</i>	<p>Land use categories, IA, and RTEMP. IA and RTEMP are weighted based on percentage of land use. These values may be used for post development conditions.</p>
SHEET 5: <i>Retention Required</i>	<p>This is the Proposed Condition Retention that will be required for each SubBasin. It is calculated as the FIRST FLUSH per the Development Agreement (Construction of Offsite Powerline Channel) The Formula used is from COS: $Vol = Cw \cdot (P/12) \cdot Area$ In HEC-1 this will be input as a Divert and not brought back The Divert will be labeled: DIVXXX, where XXX is the Basin ID</p>

Summary

PROJECT NAME: Cavasson Master Plan Phase 3 Ultimate
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

SEE SHEET FOR DETERMINATION OF THE FOLLOWING INPUT										
Sheet #	2	2	4	2	4	3	3	3	4	
BASIN NUMBER	BASIN AREA (Miles ²)	WATERCOURSE LENGTH (Miles)	Kb WEIGHTED	SLOPE ADJUSTED (Ft/Mile)	IA WEIGHTED	(in)	PSIF (in)	XKSAT (in/hr)	GREATER OF RTEMP SOIL OR WEIGHTED	
SB01-C	0.0270	0.3286	0.032	96	0.25	0.35	4.3	0.5778	45%	
SB01-B	0.0240	0.2750	0.033	115	0.25	0.35	4.3	0.5778	45%	
SB01-A	0.0610	0.2750	0.030	121	0.25	0.35	4.3	0.5778	45%	
SB02NE	0.0335	0.3873	0.032	72	0.25	0.35	4.3	0.5778	45%	
SB02NW	0.0193	0.1919	0.033	86	0.25	0.35	4.3	0.5778	45%	
SB02W	0.0571	0.3483	0.111	88	0.35	0.35	4.3	0.5111	0%	
SB02E	0.0440	0.3557	0.031	82	0.10	0.35	4.3	0.6222	80%	
SB8NW	0.0147	0.1445	0.034	83	0.10	0.35	4.3	0.6222	80%	
SB8NE	0.0150	0.1405	0.034	85	0.10	0.35	4.3	0.6222	80%	
SB8SW	0.0129	0.1383	0.034	116	0.10	0.35	4.3	0.6222	80%	
SB8SE	0.0131	0.1580	0.034	104	0.10	0.35	4.3	0.6222	80%	
SB08W	0.0589	0.3428	0.030	64	0.10	0.35	4.3	0.6222	80%	
SB07W	0.0468	0.3138	0.031	99	0.25	0.35	4.3	0.5778	45%	

SUM= 0.4272

Basin Geometry

PROJECT NAME: Cavasson Master Plan Phase 3 Ultimate
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA			WATER COURSE LENGTH		BASIN ELEVATION			SLOPE		
	(Feet ²)	(ACRES)	(Miles ²)	(Feet)	(Miles)	Low (Feet)	Low (Feet)	Δ Elevation (Feet)	(Ft/Ft)	(Ft/Mile)	ADJUSTED (Ft/Mile)
SB01-C	752,914	17.28	0.0270	1735	0.329	1681.0	1649.3	31.7	0.0183	96.47	96.5
SB01-B	668,111	15.34	0.0240	1452	0.275	1668.5	1637.0	31.5	0.0217	114.55	114.5
SB01-A	1,700,557	39.04	0.0610	1452	0.275	1659.3	1626.0	33.3	0.0229	121.09	121.1
SB02NE	934,725	21.46	0.0335	2045	0.387	1652.0	1624.0	28.0	0.0137	72.29	72.3
SB02NW	537,015	12.33	0.0193	1013	0.192	1640.5	1624.0	16.5	0.0163	86.00	86.0
SB02W	1,592,151	36.55	0.0571	1839	0.348	1634.5	1604.0	30.5	0.0166	87.57	87.6
SB02E	1,227,661	28.18	0.0440	1878	0.356	1633.2	1604.0	29.2	0.0155	82.10	82.1
SB8NW	408,919	9.39	0.0147	763	0.145	1654.0	1642.0	12.0	0.0157	83.04	83.0
SB8NE	417,750	9.59	0.0150	742	0.141	1654.0	1642.0	12.0	0.0162	85.39	85.4
SB8SW	358,807	8.24	0.0129	730	0.138	1642.0	1626.0	16.0	0.0219	115.73	115.7
SB8SE	365,480	8.39	0.0131	834	0.158	1642.5	1626.0	16.5	0.0198	104.46	104.5
SB08W	1,641,602	37.69	0.0589	1810	0.343	1634.0	1612.0	22.0	0.0122	64.18	64.2
SB07W	1,303,601	29.93	0.0468	1657	0.314	1685.0	1654.0	31.0	0.0187	98.78	98.8

SUM= 11,909,293 273 0.4272

Green-Ampt Parameters

PROJECT NAME: Cavasson Master Plan Phase 3 Ultimate
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA (Miles ²)	SOIL TYPE	% OF SOIL TYPE	ROCK OUTCROP		XKSAT ADJUSTED FOR		XKSAT (in/hr)	PSIF (in)	DTHETA (in)	RTEMP SOIL IN SUBBASIN
				% OF SOIL IMPERVIOUS	XKSAT (in/hr)	60% VEGATATION*					
SB01-C	0.0270	90	100%	0%	0.4	0.578	0.578	0.578	4.3	0.35	0%
SB01-B	0.0240	90	100%	0%	0.4	0.578	0.578	0.578	4.3	0.35	0%
SB01-A	0.0610	90	100%	0%	0.4	0.578	0.578	0.578	4.3	0.35	0%
SB02NE	0.0335	90	100%	0%	0.4	0.578	0.578	0.578	4.3	0.35	0%
SB02NW	0.0193	90	100%	0%	0.4	0.578	0.578	0.578	4.3	0.35	0%
SB02W	0.0571	90	100%	0%	0.4	0.511	0.511	0.511	4.3	0.35	0%
SB02E	0.0440	90	100%	0%	0.4	0.622	0.622	0.622	4.3	0.35	0%
SB8NW	0.0147	90	100%	0%	0.4	0.622	0.622	0.622	4.3	0.35	0%
SB8NE	0.0150	90	100%	0%	0.4	0.622	0.622	0.622	4.3	0.35	0%
SB8SW	0.0129	90	100%	0%	0.4	0.622	0.622	0.622	4.3	0.35	0%
SB8SE	0.0131	90	100%	0%	0.4	0.622	0.622	0.622	4.3	0.35	0%
SB08W	0.0589	90	100%	0%	0.4	0.622	0.622	0.622	4.3	0.35	0%
SB07W	0.0468	90	100%	0%	0.4	0.578	0.578	0.578	4.3	0.35	0%

*60% vegetation was used for C2 land uses, MFR land uses used 50% and NDR used 35% vegetation

Land Use Parameters

PROJECT NAME: Cavasson Master Plan Phase 3 Ultimate
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA ACRES	LAND USE	% OF BASIN	SUB AREA ACRES	LAND TYPE	K _o	K _o WEIGHTED	IA FOR LAND USE	IA WEIGHTED	RTEMP FOR SOIL IN BASIN	RTEMP FOR LAND USE	RTEMP WEIGHTED	RTEMP MAX
SB01-C	17.28	MFR	100%	17.28	A	0.0323	0.0323	0.25	0.25	0%	45%	45%	45%
SB01-B	15.34	MFR	100%	15.34	A	0.0326	0.0326	0.25	0.25	0%	45%	45%	45%
SB01-A	39.04	MFR	100%	39.04	A	0.0301	0.0301	0.25	0.25	0%	45%	45%	45%
SB02NE	21.46	MFR	100%	21.46	A	0.0317	0.0317	0.25	0.25	0%	45%	45%	45%
SB02NW	12.33	MFR	100%	12.33	A	0.0332	0.0332	0.25	0.25	0%	45%	45%	45%
SB02W	36.55	NDR	100%	36.55	C	0.1109	0.1109	0.35	0.35	0%	0%	0%	0%
SB02E	28.18	C2	100%	28.18	A	0.0309	0.0309	0.1	0.10	0%	80%	80%	80%
SB8NW	9.39	C2	100%	9.39	A	0.0339	0.0339	0.1	0.10	0%	80%	80%	80%
SB8NE	9.59	C2	100%	9.59	A	0.0339	0.0339	0.1	0.10	0%	80%	80%	80%
SB8SW	8.24	C2	100%	8.24	A	0.0343	0.0343	0.1	0.10	0%	80%	80%	80%
SB8SE	8.39	C2	100%	8.39	A	0.0342	0.0342	0.1	0.10	0%	80%	80%	80%
SB08W	37.69	C2	100%	37.69	A	0.0301	0.0301	0.1	0.10	0%	80%	80%	80%
SB07W	29.93	MFR	100%	29.93	A	0.0308	0.0308	0.25	0.25	0%	45%	45%	45%

SUM=

273

273

Retention Required

PROJECT NAME: Cavasson Master Plan Phase 3 Ultimate
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET

BASIN NUMBER	BASIN AREA			Weighted C Proposed Cond.	Volume Required	
	(Feet ²)	(ACRES)	(Miles ²)		[acre-ft]	[ft ³]
SB01-C	752,914	17.28	0.0270	0.85	0.612	26,665.7
SB01-B	668,111	15.34	0.0240	0.85	0.543	23,662.3
SB01-A	1,700,557	39.04	0.0610	0.85	1.383	60,228.1
SB02NE	934,725	21.46	0.0335	0.85	0.760	33,104.9
SB02NW	537,015	12.33	0.0193	0.85	0.437	19,019.3
SB02W	1,592,151	36.55	0.0571	0.85	1.295	56,388.7
SB02E	1,227,661	28.18	0.0440	0.85	0.998	43,479.6
SB8NW	408,919	9.39	0.0147	0.85	0.332	14,482.5
SB8NE	417,750	9.59	0.0150	0.85	0.340	14,795.3
SB8SW	358,807	8.24	0.0129	0.85	0.292	12,707.8
SB8SE	365,480	8.39	0.0131	0.85	0.297	12,944.1
SB08W	1,641,602	37.69	0.0589	0.85	1.335	58,140.1
SB07W	1,303,601	29.93	0.0468	0.85	1.060	46,169.2
SUM=	11,909,293	273	0.43		9.683	421,787.5

Introduction

PROJECT NAME: Cavasson Master Plan Phase 3 Existing
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 8/14/2020

The following spreadsheets were used to prepare input data for HEC-1 Green and Ampt Method described in The Drainage Design Manual for Maricopa County

Spreadsheet equations and assumptions were as follows:

SHEET 1: <i>Summary</i>	Summary of HEC-1 Input.
SHEET 2: <i>Basin Geometry</i>	Drainage areas, watercourse length, slope, adjusted slope, land type, and K_b . Slopes were adjusted according to Figure 5.4. Land type and K_b were determined using Table 5.1.
SHEET 3: <i>Green-Ampt Parameters</i>	Soil characteristics, XKSAT, PSIF, DTHETA, and RTEMP. Soil type and percentages determined from Flood Control soils map. XKSAT determined using Appendix A. If applicable a logarithmic weighted value was determined for multiple soils within a basin according to the following equation: $\overline{XSAT} = \text{ALOG} \sum [\% \text{ SOIL TYPE (IN DECIMAL)} \cdot \text{LOG}(XSAT)]$ Where: XSAT determined from Appendix A PSIF and DTHETA determined using Figure 4.3. RTEMP is a weighted value based on soil data. The following equation was used to determine the weighted value: $RTEMP = \sum \% \text{ SOIL TYPE} \cdot [\% \text{ ROCK OUTCROP (IN DECIMAL)}]$ These values may be used for predeveloped conditions.
SHEET 4: <i>Land Use Parameters</i>	Land use categories, IA, and RTEMP. IA and RTEMP are weighted based on percentage of land use. These values may be used for post development conditions.
SHEET 5: <i>Retention Required</i>	This is the Proposed Condition Retention that will be required for each SubBasin. It is calculated as the FIRST FLUSH per the Development Agreement (Construction of Offsite Powerline Channel) The Formula used is from COS: $Vol = Cw \cdot (P/12) \cdot Area$ In HEC-1 this will be input as a Divert and not brought back The Divert will be labeled: DIVXXX, where XXX is the Basin ID

Summary

PROJECT NAME: Cavasson Master Plan Phase 3 Existing
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

SEE SHEET FOR DETERMINATION OF THE FOLLOWING INPUT									
Sheet #	2	2	4	2	4	3	3	3	4
BASIN NUMBER	BASIN AREA (Miles ²)	WATERCOURSE LENGTH (Miles)	Kb WEIGHTED	SLOPE ADJUSTED (Ft/Mile)	IA WEIGHTED	DTHETA (in)	PSIF (in)	XKSAT (in/hr)	GREATER OF RTEMP SOIL OR WEIGHTED
SB01-C	0.0270	0.3286	0.119	96	0.35	0.35	4.3	0.5111	0%
SB01-B	0.0240	0.2750	0.120	115	0.35	0.35	4.3	0.5111	0%
SB01-A	0.0610	0.2750	0.110	121	0.35	0.35	4.3	0.5111	0%
SB02NE	0.0335	0.3873	0.117	72	0.35	0.35	4.3	0.5111	0%
SB02NW	0.0193	0.1919	0.123	86	0.35	0.35	4.3	0.5111	0%
SB02W	0.0571	0.3483	0.111	88	0.35	0.35	4.3	0.5111	0%
SB02E	0.0440	0.3557	0.114	82	0.35	0.35	4.3	0.5111	0%
SB8NW	0.0147	0.1445	0.126	83	0.35	0.35	4.3	0.5111	0%
SB8NE	0.0150	0.1405	0.125	85	0.35	0.35	4.3	0.5111	0%
SB8SW	0.0129	0.1383	0.127	116	0.35	0.35	4.3	0.5111	0%
SB8SE	0.0131	0.1580	0.127	104	0.35	0.35	4.3	0.5111	0%
SB08W	0.0589	0.3428	0.030	64	0.10	0.35	4.3	0.5111	80%
SB07W	0.0468	0.3138	0.113	99	0.35	0.35	4.3	0.5111	0%

SUM= 0.4272

Basin Geometry

PROJECT NAME: Cavasson Master Plan Phase 3 Existing
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA			WATER COURSE LENGTH		BASIN ELEVATION			SLOPE		
	(Feet ²)	(ACRES)	(Miles ²)	(Feet)	(Miles)	High (Feet)	Low (Feet)	Δ Elevation (Feet)	(Ft/Ft)	(Ft/Mile)	ADJUSTED (Ft/Mile)
SB01-C	752,914	17.28	0.0270	1735	0.329	1681.0	1649.3	31.7	0.0183	96.47	96.5
SB01-B	668,111	15.34	0.0240	1452	0.275	1668.5	1637.0	31.5	0.0217	114.55	114.5
SB01-A	1,700,557	39.04	0.0610	1452	0.275	1659.3	1626.0	33.3	0.0229	121.09	121.1
SB02NE	934,725	21.46	0.0335	2045	0.387	1652.0	1624.0	28.0	0.0137	72.29	72.3
SB02NW	537,015	12.33	0.0193	1013	0.192	1640.5	1624.0	16.5	0.0163	86.00	86.0
SB02W	1,592,151	36.55	0.0571	1839	0.348	1634.5	1604.0	30.5	0.0166	87.57	87.6
SB02E	1,227,661	28.18	0.0440	1878	0.356	1633.2	1604.0	29.2	0.0155	82.10	82.1
SB8NW	408,919	9.39	0.0147	763	0.145	1654.0	1642.0	12.0	0.0157	83.04	83.0
SB8NE	417,750	9.59	0.0150	742	0.141	1654.0	1642.0	12.0	0.0162	85.39	85.4
SB8SW	358,807	8.24	0.0129	730	0.138	1642.0	1626.0	16.0	0.0219	115.73	115.7
SB8SE	365,480	8.39	0.0131	834	0.158	1642.5	1626.0	16.5	0.0198	104.46	104.5
SB08W	1,641,602	37.69	0.0589	1810	0.343	1634.0	1612.0	22.0	0.0122	64.18	64.2
SB07W	1,303,601	29.93	0.0468	1657	0.314	1685.0	1654.0	31.0	0.0187	98.78	98.8

SUM= 11,909,293 273 0.4272

Green-Ampt Parameters

PROJECT NAME: Cavasson Master Plan Phase 3 Existing
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA (Miles ²)	SOIL TYPE	% OF SOIL TYPE	ROCK OUTCROP		XKSAT ADJUSTED FOR		XKSAT (in/hr)	PSIF (in)	DTHETA (in)	RTEMP SOIL IN SUBBASIN
				% OF SOIL IMPERVIOUS	XKSAT (in/hr)	35% VEGATATION	XKSAT (in/hr)				
SB01-C	0.0270	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB01-B	0.0240	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB01-A	0.0610	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB02NE	0.0335	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB02NW	0.0193	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB02W	0.0571	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB02E	0.0440	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB8NW	0.0147	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB8NE	0.0150	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB8SW	0.0129	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB8SE	0.0131	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB08W	0.0589	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	
SB07W	0.0468	90	100%	0%	0.4	0.511	0.511	4.3	0.35	0%	

Check: 0.4272

Land Use Parameters

PROJECT NAME: Cavasson Master Plan Phase 3 Existing
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA ACRES	LAND USE	% OF BASIN	SUB AREA ACRES	LAND TYPE	K _o	K _o WEIGHTED	IA FOR LAND USE	IA WEIGHTED	RTEMP FOR SOIL IN BASIN	RTEMP FOR LAND USE	RTEMP WEIGHTED	RTEMP MAX
SB01-C	17.28	NDR	100%	17.28	C	0.1191	0.1191	0.35	0.35	0%	0%	0%	0%
SB01-B	15.34	NDR	100%	15.34	C	0.1204	0.1204	0.35	0.35	0%	0%	0%	0%
SB01-A	39.04	NDR	100%	39.04	C	0.1102	0.1102	0.35	0.35	0%	0%	0%	0%
SB02NE	21.46	NDR	100%	21.46	C	0.1167	0.1167	0.35	0.35	0%	0%	0%	0%
SB02NW	12.33	NDR	100%	12.33	C	0.1227	0.1227	0.35	0.35	0%	0%	0%	0%
SB02W	36.55	NDR	100%	36.55	C	0.1109	0.1109	0.35	0.35	0%	0%	0%	0%
SB02E	28.18	NDR	100%	28.18	C	0.1138	0.1138	0.35	0.35	0%	0%	0%	0%
SB8NW	9.39	NDR	100%	9.39	C	0.1257	0.1257	0.35	0.35	0%	0%	0%	0%
SB8NE	9.59	NDR	100%	9.59	C	0.1255	0.1255	0.35	0.35	0%	0%	0%	0%
SB8SW	8.24	NDR	100%	8.24	C	0.1271	0.1271	0.35	0.35	0%	0%	0%	0%
SB8SE	8.39	NDR	100%	8.39	C	0.1269	0.1269	0.35	0.35	0%	0%	0%	0%
SB08W	37.69	C2	100%	37.69	A	0.0301	0.0301	0.1	0.10	0%	80%	80%	80%
SB07W	29.93	NDR	100%	29.93	C	0.1131	0.1131	0.35	0.35	0%	0%	0%	0%

SUM=

273

273

Retention Required

PROJECT NAME: Cavasson Master Plan Phase 3 Existing
HUBBARD JOB # : 18114-101
PREPARED BY: TSW
DATE: 9/16/2020

NOTE: SHADED HEADING INDICATES USER INPUT SPREADSHEET DATA, OTHERS CALCULATED BY SPREADSHEET.

BASIN NUMBER	BASIN AREA			Weighted C Proposed Cond.	Volume Required		feet)
	(Feet ²)	(ACRES)	(Miles ²)		[acre-ft]	[ft ³]	
SB01-C	752,914	17.28	0.0270	0.85	0.612	26,665.7	
SB01-B	668,111	15.34	0.0240	0.85	0.543	23,662.3	
SB01-A	1,700,557	39.04	0.0610	0.85	1.383	60,228.1	
SB02NE	934,725	21.46	0.0335	0.85	0.760	33,104.9	
SB02NW	537,015	12.33	0.0193	0.85	0.437	19,019.3	
SB02W	1,592,151	36.55	0.0571	0.85	1.295	56,388.7	
SB02E	1,227,661	28.18	0.0440	0.85	0.998	43,479.6	
SB8NW	408,919	9.39	0.0147	0.85	0.332	14,482.5	
SB8NE	417,750	9.59	0.0150	0.85	0.340	14,795.3	
SB8SW	358,807	8.24	0.0129	0.85	0.292	12,707.8	
SB8SE	365,480	8.39	0.0131	0.85	0.297	12,944.1	
SB08W	1,641,602	37.69	0.0589	0.85	1.335	58,140.1	
SB07W	1,303,601	29.93	0.0468	0.85	1.060	46,169.2	
SUM=	11,909,293	273	0.43		9.683	421,787.5	

Appendix D
Cavasson HEC-1 Ultimate
Grayhawk Residences at Cavasson

10yr-6hr-Ultimate

```

1*****
*****
*
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*
* JUN 1998 *
*
* VERSION 4.1 *
*
*
* RUN DATE 30APR21 TIME 13:35:28 *
*
*
*****
*****

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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 XXXX X
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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

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	CROSS ROADS EAST DRAINAGE INFRASTRUCTURE									
2	ID	POWERLINE CORRIDOR									
3	ID	RESERVE ROUTING OF BASIN 53R N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ									
4	ID	INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:									
5	ID	10-YR, 6-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND									
6	ID	PIMA ROAD FLOWS.									
7	ID										
8	ID	PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14									
9	ID	MODELERS: RK, MW									
10	ID										
11	ID	REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 11/14/18									
12	ID	MODELERS: MSW, ES									
13	ID	REVISIONS NOTED WITH HE									
14	ID	ULTIMATE CONDITION MODEL, WITH POWERLINE AND BASIN 53R AND									
15	ID	THIS IS THE POST-DEVELOPMENT MODEL WITH DEVELOPMENT N OF LEGACY									
16	ID	UPDATED INFLOW HYDROGRAPHS TO REFLECT 15MIN INC.									
17	ID										
18	IT	3	0	0	1000						
19	IN	15									
20	IO	5									
		*DIAGRAM									
		*									
21	JD	1.817	0.0001								
22	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.074
23	PC	0.087	0.099	0.118	0.138	0.216	0.377	0.834	0.911	0.931	0.950
24	PC	0.962	0.972	0.983	0.991	1.000					
25	JD	1.806	0.5000								
26	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.074
27	PC	0.087	0.099	0.118	0.138	0.216	0.377	0.834	0.911	0.931	0.950
28	PC	0.962	0.972	0.983	0.991	1.000					
29	JD	1.772	2.8								
30	PC	0.000	0.009	0.016	0.025	0.034	0.042	0.051	0.059	0.068	0.077
31	PC	0.088	0.101	0.121	0.164	0.253	0.451	0.694	0.836	0.900	0.938


```

86      KK  R2W-2  ROUTE
87      RK  1380  0.0140  0.018          TRAP  2.000  0.00
88
      *

89      KK  SB01C  BASIN
90      BA  0.027
91      LG  0.25   0.25   4.03   0.56   45
92      UC  0.264  0.272
93      UA   0     3.0    5.0    8.0    12.0   20.0   43.0   75.0   90.0   96.0
94      UA  100
      *

95      KK  SB01C  DIVERT
96      KM          DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01C
97      KM          FIRST FLUSH VOL = 0.612 AC-FT
98      DT  RET01C  0.612
99      DI   0.0   10.0   20.0   30.0   40.0   50.0   60.0  100.0  150.0  200.0
100     DQ   0.0   10.0   20.0   30.0   40.0   50.0   60.0  100.0  150.0  200.0
      *

101     KK  R1C-1B  ROUTE
102     RK   542   0.005  0.013          CIRC  5.000
      *

103     KK  SB01B  BASIN
104     BA  0.024
105     LG  0.25   0.25   4.03   0.56   45
106     UC  0.234  0.224
107     UA   0     3.0    5.0    8.0    12.0   20.0   43.0   75.0   90.0   96.0
108     UA  100
      *

109     KK  SB01B  DIVERT
110     KM          DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01B
111     KM          FIRST FLUSH VOL = 0.543 AC-FT
112     DT  RET01B  0.543
113     DI   0.0   10.0   20.0   30.0   40.0   50.0   60.0  100.0  150.0  200.0
114     DQ   0.0   10.0   20.0   30.0   40.0   50.0   60.0  100.0  150.0  200.0
      *

115     KK  CP-01B  COMBINE
116     KM          COMBINE ROUTE FROM 1C-1B WITH NEW SUB BASIN SB01B
117     HC   2     0.051
      *

118     KK  R1B-2N  ROUTE
119     RK  2144  0.008  0.013          CIRC  5.000
      *

120     KK  SB02NE  BASIN
121     BA  0.0335
122     LG  0.25   0.25   4.03   0.56   45
123     UC  0.314  0.336
124     UA   0     3.0    5.0    8.0    12.0   20.0   43.0   75.0   90.0   96.0
125     UA  100
      *

126     KK  SB02NE  DIVERT
127     KM          DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02NE
128     KM          FIRST FLUSH VOL = 0.760 AC-FT
129     DT  RET2NE  0.760
130     DI   0.0   10.0   20.0   30.0   40.0   50.0   60.0  100.0  150.0  200.0
131     DQ   0.0   10.0   20.0   30.0   40.0   50.0   60.0  100.0  150.0  200.0
      *

132     KK  CP-02N  COMBINE
133     KM          COMBINE ROUTE 1B-2N (BASINS SB01-B AND SB01-C) WITH SB02NE
134     HC   2     0.085
      *

135     KK  R2N-2  ROUTE
136     RK  1380  0.014  0.018          TRAP  2.000  0.00
      *

137     KK  SB02E  BASIN

```

1

HEC-1 INPUT

PAGE 4

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

138	BA	0.040									
139	LG	0.10	0.25	4.03	0.61	80					
140	UC	0.254	0.212								
141	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
142	UA	100									
	*										
143	KK	SB02E	DIVERT								
144	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02E								
145	KM		FIRST FLUSH VOL = 0.998 AC-FT								
146	DT	RET2E	0.998								
147	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
148	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
149	KK	SB02W	BASIN								
150	BA	0.0571									
151	LG	0.35	0.35	4.33	0.51	0					
152	UC	0.686	0.535								
153	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
154	UA	100									
	*										
HEC-1 INPUT											
LINE	ID	.....1	.....2	.....3	.....4	.....5	.....6	.....7	.....8	.....9	.....10
155	KK	CP-02	COMBINE								
156	HC	4	0.1816								
	*										
157	KK	R2-3	ROUTE								
158	KM		MILLER RD CHANNEL FROM SR 101L FREEWAY TO MAYO BLVD								
159	RK	1260	0.0015	0.030		TRAP	92	4			
	*										
160	KK	SB03	BASIN								
161	BA	0.048									
162	LG	0.15	0.25	4.50	0.47	55					
163	UC	0.364	0.294								
164	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
165	UA	100									
	*										
166	KK	CP-03	COMBINE								
167	HC	2									
	*										
168	KK	R3-5	ROUTE								
169	KM		MILLER RD CHANNEL FROM MAYO BLVD TO PRINCESS BLVD								
170	RK	2396	0.0015	0.03		TRAP	98	4			
	*										
171	KK	SB05	BASIN								
172	BA	0.126									
173	LG	0.22	0.25	4.50	0.44	48					
174	UC	0.327	0.226								
175	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
176	UA	100									
	*										
177	KK	CP-5A	COMBINE								
178	HC	2									
	*										
179	KK	SB07W	BASIN								
180	BA	0.0468									
181	LG	0.25	0.25	4.03	0.56	45					
182	UC	0.250	0.178								
183	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
184	UA	100									
	*										
185	KK	SB07W	DIVERT								
186	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB07W								
187	KM		FIRST FLUSH VOL = 1.060 AC-FT								
188	DT	RET07W	1.060								
189	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
190	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										

LINE	ID	1	2	3	4	5	6	7	8	9	10
191	KK	R7W-8W	ROUTE								
192	KM	HAYDEN ROAD NORTH CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY									
193	KM	HE MODIFIED ROUTE TO LOOP 101 W OF HAYDEN									
194	RK	3754	0.0013	0.03		TRAP	46	4			
	*										
195	KK	SB8NW	BASIN								
196	KM	BASIN JUST SOUTH OF LEGACY - FUTURE MOB SITE									
197	BA	0.0147									
198	LG	0.10	0.25	4.03	0.61	80					
199	UC	0.171	0.131								
200	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
201	UA	100									
	*										
202	KK	SB8NW	DIVERT								
203	KM	DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8NW									
204	KM	FIRST FLUSH VOL = 0.332 AC-FT									
205	DT	RET8NW	0.332								
206	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
207	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
208	KK	R8NW8N	ROUTE								
209	KM	ROUTE NEW SUB BASIN SB8NW TO OUTLET AT CAVASSON BLVD									
210	KM	NORTH HALF OF BASIN 8W WAS BROKEN DOWN INTO 4 SUB-SUBBASINS									
211	RK	643	0.0113	0.018		TRAP	46	4			
	*										
212	KK	SB8NE	BASIN								
213	KM	SITE JUST SOUTH OF LEGACY AND WEST OF HAYDEN - FUTURE RETAIL									
214	BA	0.015									
215	LG	0.10	0.25	4.03	0.61	80					
216	UC	0.164	0.113								
217	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
218	UA	100									
	*										
219	KK	SB8NE	DIVERT								
220	KM	DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8NE									
221	KM	FIRST FLUSH VOL = 0.340 AC-FT									
222	DT	RET8NE	0.340								
223	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
224	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
225	KK	R8NE8N	ROUTE								
226	KM	ROUTE NEW SUB BASIN SB8NE TO OUTLET AT CAVASSON BLVD									
227	KM	NORTH HALF OF BASIN 8W WAS BROKEN DOWN INTO 4 SUB-SUBBASINS									
228	RK	622	0.011	0.018		TRAP	46	4			
	*										

LINE	ID	1	2	3	4	5	6	7	8	9	10
229	KK	SB8SW	BASIN								
230	KM	SITE JUST NORTH OF CAVASSON BLVD EAST OF CLARET DR - FUTURE MF									
231	BA	0.0129									
232	LG	0.10	0.25	4.03	0.61	80					
233	UC	0.149	0.110								
234	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
235	UA	100									
	*										
236	KK	SB8SW	DIVERT								
237	KM	DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8SW									
238	KM	FIRST FLUSH VOL = 0.292 AC-FT									
239	DT	RET8SW	0.292								
240	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
241	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
242	KK	SB8SE	BASIN								
243	KM	SITE JUST NORTH OF CAVASSON AND WEST OF HAYDEN - FUTURE HOTEL OR RETAIL									

244	BA	0.0131									
245	LG	0.10	0.25	4.03	0.61	80					
246	UC	0.165	0.137								
247	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
248	UA	100									
	*										
249	KK	SB8SE	DIVERT								
250	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8SE								
251	KM		FIRST FLUSH VOL = 0.297 AC-FT								
252	DT	RET8SE	0.297								
253	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
254	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
255	KK	CP-08N	COMBINE								
256	KM		CP AT INLET ON NORTH SIDE OF CAVASSON - ENTERS EXIST STORM DRAIN								
257	HC	4	0.0557								
	*										
258	KK	R8N-8W	ROUTE								
259	KM		ROUTE NEW SUB BASINS SB8NE SB8NW SB8SW SB8SE TO CP-08W								
260	KM		ROUTE IN STORM DRAIN								
261	RK	1592	0.015	0.013		CIRC	3				
	*										
262	KK	SB08W	BASIN								
263	BA	0.0589									
264	LG	0.10	0.25	4.03	0.61	80					
265	UC	0.262	0.177								
266	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
267	UA	100									
	*										

1

HEC-1 INPUT

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

268	KK	SB08W	DIVERT								
269	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB08W								
270	KM		FIRST FLUSH VOL REQ = 1.335 AC-FT, PROVIDED = 1.415								
271	KM		THIS IS EXISTING AND WAS BUILT IN PHASE 1								
272	DT	RET8W	1.415								
273	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
274	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
275	KK	CP-08W	COMBINE								
276	HC	3	0.1614								
	*										
277	KK	R8W-4	ROUTE								
278	RK	3137	0.0130	0.030		TRAP	2.000	0.00			
	*										
279	KK	SB04	BASIN								
280	BA	0.144									
281	LG	0.14	0.25	4.60	0.44	61					
282	UC	0.305	0.199								
283	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
284	UA	100									
	*										
285	KK	CP-4	COMBINE								
286	HC	2									
	*										
287	KK	R4-5	ROUTE								
288	KM		PRINCESS BLVD CHANNEL FROM 77TH ST TO 76TH ST								
289	RK	1992	0.0013	0.03		TRAP	39	4			
	*										
290	KK	CP-05	COMBINE								
291	KM		PRINCESS BLVD AND 76TH ST (PRINCESS BLVD CHANNEL)								
292	KM		COMBINE CP-05A AND R4-5								
293	HC	2									
	*										
294	KK	R5-6	ROUTE								

343	QI	0	0	0	0	0	0	0	0	0	0
344	QI	0	0	0	0	0	0.07	11.70	33.57	285.55	257.89
345	QI	236.82	258.26	406.55	486.55	461.36	425.60	409.84	395.31	391.77	376.42
346	QI	346.76	376.76	276.32	247.65	220.91	197.44	178.64	155.41	139.22	129.78
347	QI	113.97	102.76	96.30	85.88	79.7	72.75	65.45	59.94	54.69	51.22
348	QI	52.3	44.56	41.87	42.77	36.93	34.05	32.15	29.01	27.72	27.03
349	QI	25.05	23.86	22.04	20.81	19.27	18.55	17.90	20.82	16.03	15.23

*

350 KK BINFLO
 351 KM TOTAL INFLOW INTO BASIN 53R.
 352 HC 2
 *

353 KK BASIN
 354 KM BASIN STAGE/STORAGE FROM PROPOSED CONTOURS BETWEEN
 355 KM ELEV 1594 AND 1615; BASIN SIDE SLOPES STEEPENED TO 3:1
 356 KM OUTFLOW RATING CURVE FROM CULVERTMASTER FOR 2-60" PIPES
 357 KM THE OUTLET PIPES ARE INLET CONTROLLED.

358	RS	1	STOR	0							
359	SV	0	44.9	76.8	108.7	140.6	171.5	202.5	233.5	264.5	295.5
360	SV	328.7	362.0	395.2	428.5	461.7	497.2	532.7	568.3	603.8	639.3
361	SE	1594	1597	1598	1599	1600	1601	1602	1603	1604	1605
362	SE	1606	1607	1608	1609	1610	1611	1612	1613	1614	1615
363	SQ	0	94.6	153.4	209.8	244.2	264.5	284.0	302.5	320.1	336.9
364	SQ	353.0	368.5	383.5	398.0	412.0	425.7	438.9	451.9	464.5	476.8

*

365 KK BSNRT1
 366 KM 2-60" CMP OULFLOW PIPES FOR BASIN 53R UNDER SR 101L FREEWAY.
 367 KM DOWNSTREAM CONNECTING PIPES ARE 60-INCH RCP AND WILL HAVE
 368 KM EXCESS CAPACITY.
 369 RK 550 0.0052 0.024 CIRC 7.0
 *

370 KK BSNRT2
 371 KM 2-60" RCP PIPES FROM SR 101L FREEWAY TO UNION HILLS DR (BAS 53R OUTFALL)
 372 RK 1200 0.0077 0.013 CIRC 7.0
 *

373 KK SB10 BASIN
 374 BA 0.040
 375 LG 0.15 0.25 4.25 0.55 55
 376 UC 0.233 0.161
 377 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 378 UA 100
 *

*

HEC-1 INPUT

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

379 KK CP-10 COMBINE
 380 KM UNION HILLS DR AND 82ND ST (UNION HILLS DR CHANNEL)
 381 HC 2
 *

382 KK R10-11 ROUTE
 383 KM UNION HILLS DR CHANNEL FROM 82ND ST TO HAYDEN ROAD
 384 RK 1277 0.0014 0.03 TRAP 220 4
 *

385 KK SB11 BASIN
 386 BA 0.071
 387 LG 0.15 0.25 4.15 0.58 55
 388 UC 0.296 0.232
 389 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 390 UA 100
 *

*

391 KK CP-11 COMBINE
 392 KM UNION HILLS DR AND HAYDEN ROAD (HAYDEN RD SOUTH CHANNEL)
 393 HC 2
 *

394 ZZ

*

SCHEMATIC DIAGRAM OF STREAM NETWORK

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


```

157 R2-3
    .
    .
160 . SB03
    .
    .
166 CP-03.....
    V
    V
168 R3-5
    .
    .
171 . SB05
    .
    .
177 CP-5A.....
    .
    .
179 . SB07W
    .
    .
188 . -----> RET07W
185 . SB07W
    .
    .
    V
    V
191 . R7W-8W
    .
    .
195 . SB8NW
    .
    .
    .
205 . -----> RET8NW
202 . SB8NW
    .
    .
    V
    V
208 . R8NW8N
    .
    .
    .
212 . SB8NE
    .
    .
    .
222 . -----> RET8NE
219 . SB8NE
    .
    .
    V
    V
225 . R8NE8N
    .
    .
    .
229 . SB8SW
    .
    .
    .
239 . -----> RET8SW
236 . SB8SW
    .
    .
    .
242 . SB8SE
    .
    .
    .
252 . -----> RET8SE
249 . SB8SE
    .
    .
    .
255 . CP-08N.....
    .
    .
    V
    V
258 . R8N-8W
    .
    .
    .
262 . SB08W
    .
    .
    .
272 . -----> RET8W
268 . SB08W
    .
    .
    .
275 . CP-08W.....
    .
    .
    V
    V
277 . R8W-4
    .
    .

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279      .      .      SB04
      .      .      .
      .      .      .
285      .      CP-4.....
      .      V
      .      V
287      .      R4-5
      .      .
      .      .
290      CP-05.....
      .      V
      .      V
294      .      R5-6
      .      .
      .      .
297      .      SB06
      .      .
      .      .
303      CP-06.....
      .      .
      .      .
305      .      SB07E
      .      V
      .      V
311      .      R7E-8E
      .      .
      .      .
313      .      SB08E
      .      .
      .      .
319      .      .      SB09N
      .      .      V
      .      .      V
325      .      .      R9NR8E
      .      .      .
      .      .      .
327      .      CP-08E.....
      .      V
      .      V
329      .      R8E-R9
      .      .
      .      .
331      .      SB09
      .      .
      .      .
337      .      CP-09.....
      .      .
      .      .
339      .      PWRCH
      .      .
      .      .
350      .      BINFLO.....
      .      V
      .      V
353      .      BASIN
      .      V
      .      V
365      .      BSNRT1
      .      V
      .      V
370      .      BSNRT2
      .      .
      .      .
373      .      SB10
      .      .
      .      .
379      .      CP-10.....
      .      V
      .      V
382      .      R10-11
      .      .
      .      .
385      .      SB11
      .      .
      .      .
391      .      CP-11.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****

 * * * * *
 * FLOOD HYDROGRAPH PACKAGE (HEC-1) *
 * JUN 1998 *
 * VERSION 4.1 *
 * * * * *
 * RUN DATE 30APR21 TIME 13:35:28 *
 * * * * *

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

CROSS ROADS EAST DRAINAGE INFRASTRUCTURE
 POWERLINE CORRIDOR
 RESERVE ROUTING OF BASIN 53R N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ
 INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:
 10-YR, 6-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND
 PIMA ROAD FLOWS.

PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14
 MODELERS: RK, MW

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 11/14/18
 MODELERS: MSW, ES
 REVISIONS NOTED WITH HE
 ULTIMATE CONDITION MODEL, WITH POWERLINE AND BASIN 53R AND
 THIS IS THE POST-DEVELOPMENT MODEL WITH DEVELOPMENT N OF LEGACY
 UPDATED INFLOW HYDROGRAPHS TO REFLECT 15MIN INC.

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

IT HYDROGRAPH TIME DATA
 NMIN 3 MINUTES IN COMPUTATION INTERVAL
 IDATE 1 0 STARTING DATE
 ITIME 0000 STARTING TIME
 NQ 1000 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 3 0 ENDING DATE
 NDTIME 0157 ENDING TIME
 ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.05 HOURS
 TOTAL TIME BASE 49.95 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

21 JD INDEX STORM NO. 1
 STRM 1.82 PRECIPITATION DEPTH
 TRDA 0.00 TRANSPOSITION DRAINAGE AREA

22 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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 0.00 0.00 0.00 0.00 0.00 0.02 0.02 0.02 0.02 0.02
 0.03 0.03 0.03 0.03 0.03 0.09 0.09 0.09 0.09 0.09

0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

25 JD INDEX STORM NO. 2
STRM 1.81 PRECIPITATION DEPTH
TRDA 0.50 TRANSPOSITION DRAINAGE AREA

26 PI PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02
0.03	0.03	0.03	0.03	0.03	0.09	0.09	0.09	0.09	0.09
0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

29 JD INDEX STORM NO. 3
STRM 1.77 PRECIPITATION DEPTH
TRDA 2.80 TRANSPOSITION DRAINAGE AREA

30 PI PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02
0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05
0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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*** HEC-1 ERROR 1 *** INVALID CARD IDENTIFICATION CODE OR CARD OUT OF SEQUENCE
CARD NO. 88

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*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

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+		R1B-2N	47.	4.20	3.	1.	0.	0.05
	HYDROGRAPH AT							
+		SB02NE	29.	4.20	4.	1.	0.	0.03
	DIVERSION TO							
+		RET2NE	27.	4.15	2.	0.	0.	0.03
	HYDROGRAPH AT							
+		SB02NE	27.	4.25	2.	1.	0.	0.03
	2 COMBINED AT							
+		CP-02N	73.	4.25	6.	1.	1.	0.09
	ROUTED TO							
+		R2N-2	72.	4.25	6.	1.	1.	0.09
	HYDROGRAPH AT							
+		SB02E	55.	4.15	7.	2.	1.	0.04
	DIVERSION TO							
+		RET2E	28.	3.95	2.	1.	0.	0.04
	HYDROGRAPH AT							
+		SB02E	55.	4.15	5.	1.	1.	0.04
	HYDROGRAPH AT							
+		SB02W	16.	4.50	2.	1.	0.	0.06
	4 COMBINED AT							
+		CP-02	210.	4.25	28.	7.	4.	0.18
	ROUTED TO							
+		R2-3	209.	4.35	28.	7.	4.	0.18
	HYDROGRAPH AT							
+		SB03	47.	4.15	6.	2.	1.	0.05
	2 COMBINED AT							
+		CP-03	241.	4.35	33.	9.	4.	0.23
	ROUTED TO							
+		R3-5	234.	4.50	33.	9.	4.	0.23
	HYDROGRAPH AT							
+		SB05	134.	4.10	15.	4.	2.	0.13
	2 COMBINED AT							
+		CP-5A	277.	4.50	47.	13.	6.	0.36
	HYDROGRAPH AT							
+		SB07W	54.	4.15	5.	1.	1.	0.05
	DIVERSION TO							
+		RET07W	41.	4.05	2.	1.	0.	0.05
	HYDROGRAPH AT							
+		SB07W	54.	4.15	3.	1.	0.	0.05
	ROUTED TO							
+		R7W-8W	51.	4.65	5.	1.	1.	0.05
	HYDROGRAPH AT							
+		SB8NW	24.	4.05	2.	1.	0.	0.01
	DIVERSION TO							
+		RET8NW	8.	3.80	1.	0.	0.	0.01
	HYDROGRAPH AT							
+		SB8NW	24.	4.05	2.	0.	0.	0.01
	ROUTED TO							
+		R8NW8N	24.	4.10	2.	0.	0.	0.01
	HYDROGRAPH AT							
+		SB8NE	25.	4.05	2.	1.	0.	0.01
	DIVERSION TO							
+		RET8NE	8.	3.80	1.	0.	0.	0.01

+	HYDROGRAPH AT	SB8NE	25.	4.05	2.	0.	0.	0.01
	ROUTED TO							
+		R8NE8N	25.	4.10	2.	0.	0.	0.01
	HYDROGRAPH AT							
+		SB8SW	22.	4.05	2.	1.	0.	0.01
	DIVERSION TO							
+		RET8SW	7.	3.75	1.	0.	0.	0.01
	HYDROGRAPH AT							
+		SB8SW	22.	4.05	2.	0.	0.	0.01
	HYDROGRAPH AT							
+		SB8SE	21.	4.05	2.	1.	0.	0.01
	DIVERSION TO							
+		RET8SE	7.	3.80	1.	0.	0.	0.01
	HYDROGRAPH AT							
+		SB8SE	21.	4.05	2.	0.	0.	0.01
	4 COMBINED AT							
+		CP-08N	90.	4.05	7.	2.	1.	0.06
	ROUTED TO							
+		R8N-8W	89.	4.10	7.	2.	1.	0.06
	HYDROGRAPH AT							
+		SB08W	85.	4.15	10.	2.	1.	0.06
	DIVERSION TO							
+		RET8W	36.	3.90	3.	1.	0.	0.06
	HYDROGRAPH AT							
+		SB08W	85.	4.15	7.	2.	1.	0.06
	3 COMBINED AT							
+		CP-08W	172.	4.10	18.	5.	2.	0.16
	ROUTED TO							
+		R8W-4	168.	4.15	18.	5.	2.	0.16
	HYDROGRAPH AT							
+		SB04	178.	4.10	20.	5.	2.	0.14
	2 COMBINED AT							
+		CP-4	346.	4.10	38.	10.	5.	0.31
	ROUTED TO							
+		R4-5	338.	4.20	38.	10.	5.	0.31
	2 COMBINED AT							
+		CP-05	432.	4.20	82.	22.	11.	0.66
	ROUTED TO							
+		R5-6	427.	4.30	82.	22.	11.	0.66
	HYDROGRAPH AT							
+		SB06	145.	4.10	17.	4.	2.	0.14
	2 COMBINED AT							
+		CP-06	499.	4.25	96.	25.	12.	0.80
	HYDROGRAPH AT							
+		SB07E	9.	4.40	1.	0.	0.	0.03
	ROUTED TO							
+		R7E-8E	8.	4.50	1.	0.	0.	0.03
	HYDROGRAPH AT							
+		SB08E	21.	4.55	3.	1.	0.	0.08
	HYDROGRAPH AT							
+		SB09N	6.	4.55	2.	0.	0.	0.03
	ROUTED TO							
+		R9NR8E	6.	4.65	2.	0.	0.	0.03

+	3 COMBINED AT	CP-08E	34.	4.60	6.	2.	1.	0.13
	ROUTED TO	R8E-R9	34.	4.60	6.	2.	1.	0.13
+	HYDROGRAPH AT	SB09	34.	4.45	5.	1.	1.	0.09
+	2 COMBINED AT	CP-09	66.	4.55	11.	3.	1.	0.22
+	HYDROGRAPH AT	PWRCH	487.	5.75	285.	91.	50.	7.00
+	2 COMBINED AT	BINFLO	484.	5.75	283.	90.	50.	7.22
+	ROUTED TO	BASIN	171.	9.10	156.	85.	48.	7.22
+	ROUTED TO	BSNRT1	171.	9.10	156.	85.	48.	7.22
+	ROUTED TO	BSNRT2	171.	9.10	156.	85.	48.	7.22
+	HYDROGRAPH AT	SB10	52.	4.05	5.	1.	1.	0.04
+	2 COMBINED AT	CP-10	171.	9.10	156.	85.	49.	7.26
+	ROUTED TO	R10-11	171.	9.20	156.	85.	48.	7.26
+	HYDROGRAPH AT	SB11	77.	4.10	9.	2.	1.	0.07
+	2 COMBINED AT	CP-11	171.	9.20	156.	85.	49.	7.33

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	INTERPOLATED TO		VOLUME
							COMPUTATION	INTERVAL	
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	PEAK	TIME TO PEAK	(IN)
FOR STORM = 1	STORM AREA (SQ MI) =			0.00					
R1A-2W	MANE	0.28	86.74	255.73	0.51	3.00	86.50	258.00	0.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8110E+01 EXCESS=0.0000E+00 OUTFLOW=0.8108E+01 BASIN STORAGE=0.2428E-02 PERCENT ERROR= 0.0

FOR STORM = 2	STORM AREA (SQ MI) =			0.50					
R1A-2W	MANE	0.22	86.23	255.60	0.50	3.00	85.99	258.00	0.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8082E+01 EXCESS=0.0000E+00 OUTFLOW=0.8081E+01 BASIN STORAGE=0.2428E-02 PERCENT ERROR= 0.0

FOR STORM = 3	STORM AREA (SQ MI) =			2.80					
R1A-2W	MANE	0.23	56.86	261.41	0.46	3.00	56.60	261.00	0.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7389E+01 EXCESS=0.0000E+00 OUTFLOW=0.7388E+01 BASIN STORAGE=0.2428E-02 PERCENT ERROR= 0.0

FOR STORM = 1	STORM AREA (SQ MI) =			0.00					
R2W-2	MANE	0.41	97.65	258.39	0.54	3.00	97.55	258.00	0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8773E+01 EXCESS=0.0000E+00 OUTFLOW=0.8771E+01 BASIN STORAGE=0.3356E-02 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R2W-2 MANE 0.41 96.96 258.16 0.54 3.00 96.86 258.00 0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8738E+01 EXCESS=0.0000E+00 OUTFLOW=0.8735E+01 BASIN STORAGE=0.3354E-02 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R2W-2 MANE 0.36 63.48 261.95 0.48 3.00 62.70 264.00 0.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7822E+01 EXCESS=0.0000E+00 OUTFLOW=0.7820E+01 BASIN STORAGE=0.3350E-02 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R1C-1B MANE 0.47 26.07 249.94 0.64 3.00 25.45 252.00 0.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9235E+00 EXCESS=0.0000E+00 OUTFLOW=0.9234E+00 BASIN STORAGE=0.1159E-13 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R1C-1B MANE 0.40 25.48 250.16 0.63 3.00 25.16 252.00 0.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9114E+00 EXCESS=0.0000E+00 OUTFLOW=0.9112E+00 BASIN STORAGE=0.1161E-13 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R1C-1B MANE 0.40 12.02 255.91 0.42 3.00 11.53 258.00 0.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6045E+00 EXCESS=0.0000E+00 OUTFLOW=0.6050E+00 BASIN STORAGE=0.1171E-13 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R1B-2N MANE 1.00 48.05 253.91 0.64 3.00 47.04 252.00 0.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1748E+01 EXCESS=0.0000E+00 OUTFLOW=0.1752E+01 BASIN STORAGE=0.3293E-11 PERCENT ERROR= -0.2

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R1B-2N MANE 0.96 47.49 253.51 0.63 3.00 46.32 252.00 0.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1727E+01 EXCESS=0.0000E+00 OUTFLOW=0.1726E+01 BASIN STORAGE=0.3440E-11 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R1B-2N MANE 1.20 21.35 259.25 0.42 3.00 21.16 258.00 0.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1144E+01 EXCESS=0.0000E+00 OUTFLOW=0.1146E+01 BASIN STORAGE=0.3398E-11 PERCENT ERROR= -0.2

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2N-2 MANE 0.38 73.38 255.29 0.64 3.00 73.19 255.00 0.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2890E+01 EXCESS=0.0000E+00 OUTFLOW=0.2895E+01 BASIN STORAGE=0.5835E-06 PERCENT ERROR= -0.2

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R2N-2 MANE 0.42 72.58 255.46 0.63 3.00 72.21 255.00 0.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2852E+01 EXCESS=0.0000E+00 OUTFLOW=0.2855E+01 BASIN STORAGE=0.4437E-06 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R2N-2 MANE 0.51 34.33 261.97 0.42 3.00 34.12 261.00 0.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1894E+01 EXCESS=0.0000E+00 OUTFLOW=0.1895E+01 BASIN STORAGE=0.4997E-06 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2-3 MANE 2.42 211.40 259.77 1.55 3.00 210.49 261.00 1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1506E+02 EXCESS=0.0000E+00 OUTFLOW=0.1503E+02 BASIN STORAGE=0.3148E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R2-3 MANE 2.38 209.22 260.63 1.54 3.00 208.79 261.00 1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1494E+02 EXCESS=0.0000E+00 OUTFLOW=0.1492E+02 BASIN STORAGE=0.3148E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R2-3 MANE 2.90 122.62 266.89 1.22 3.00 122.54 267.00 1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1184E+02 EXCESS=0.0000E+00 OUTFLOW=0.1186E+02 BASIN STORAGE=0.3148E-01 PERCENT ERROR= -0.4

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R3-5 MANE 3.00 238.72 269.68 1.48 3.00 238.21 270.00 1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1817E+02 EXCESS=0.0000E+00 OUTFLOW=0.1812E+02 BASIN STORAGE=0.6963E-01 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R3-5 MANE 3.00 233.59 269.44 1.47 3.00 233.56 270.00 1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1804E+02 EXCESS=0.0000E+00 OUTFLOW=0.1798E+02 BASIN STORAGE=0.6661E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R3-5 MANE 3.00 140.70 278.84 1.18 3.00 140.60 279.00 1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1453E+02 EXCESS=0.0000E+00 OUTFLOW=0.1444E+02 BASIN STORAGE=0.7428E-01 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R7W-8W MANE 1.68 52.79 276.79 0.96 3.00 51.01 279.00 0.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1600E+01 EXCESS=0.0000E+00 OUTFLOW=0.2399E+01 BASIN STORAGE=0.2981E-03 PERCENT ERROR= -50.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R7W-8W MANE 1.69 52.24 276.99 0.95 3.00 50.66 279.00 0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1579E+01 EXCESS=0.0000E+00 OUTFLOW=0.2373E+01 BASIN STORAGE=0.2851E-03 PERCENT ERROR= -50.4

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R7W-8W MANE 0.57 23.36 290.76 0.62 3.00 23.27 291.00 0.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1047E+01 EXCESS=0.0000E+00 OUTFLOW=0.1550E+01 BASIN STORAGE=0.2509E-03 PERCENT ERROR= -48.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8NW8N MANE 0.90 23.67 245.12 1.12 3.00 23.61 246.00 1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8762E+00 EXCESS=0.0000E+00 OUTFLOW=0.8785E+00 BASIN STORAGE=0.1427E-06 PERCENT ERROR= -0.3

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8NW8N MANE 0.89 23.51 245.06 1.11 3.00 23.45 246.00 1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8684E+00 EXCESS=0.0000E+00 OUTFLOW=0.8709E+00 BASIN STORAGE=0.1495E-06 PERCENT ERROR= -0.3

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8NW8N MANE 0.99 12.76 245.64 1.01 3.00 12.75 246.00 1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7895E+00 EXCESS=0.0000E+00 OUTFLOW=0.7947E+00 BASIN STORAGE=0.1506E-06 PERCENT ERROR= -0.7

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8NE8N MANE 0.90 25.10 244.37 1.12 3.00 24.86 246.00 1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8929E+00 EXCESS=0.0000E+00 OUTFLOW=0.8983E+00 BASIN STORAGE=0.1026E-06 PERCENT ERROR= -0.6

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8NE8N MANE 0.87 24.95 244.34 1.11 3.00 24.69 246.00 1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8849E+00 EXCESS=0.0000E+00 OUTFLOW=0.8866E+00 BASIN STORAGE=0.1149E-06 PERCENT ERROR= -0.2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8NE8N MANE 1.02 13.29 245.08 1.01 3.00 13.20 246.00 1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8044E+00 EXCESS=0.0000E+00 OUTFLOW=0.8070E+00 BASIN STORAGE=0.1185E-06 PERCENT ERROR= -0.3

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8N-8W MANE 0.50 90.26 244.05 1.12 3.00 89.79 246.00 1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3323E+01 EXCESS=0.0000E+00 OUTFLOW=0.3326E+01 BASIN STORAGE=0.1332E-07 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8N-8W MANE 0.50 89.65 244.04 1.11 3.00 89.18 246.00 1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3296E+01 EXCESS=0.0000E+00 OUTFLOW=0.3298E+01 BASIN STORAGE=0.1340E-07 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8N-8W MANE 0.71 48.48 244.61 1.01 3.00 48.33 246.00 1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2995E+01 EXCESS=0.0000E+00 OUTFLOW=0.2995E+01 BASIN STORAGE=0.1327E-07 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8W-4 MANE 0.74 171.86 247.74 1.06 3.00 169.25 249.00 1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9153E+01 EXCESS=0.0000E+00 OUTFLOW=0.9156E+01 BASIN STORAGE=0.1251E-03 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8W-4 MANE 0.75 170.53 247.11 1.05 3.00 168.12 249.00 1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9058E+01 EXCESS=0.0000E+00 OUTFLOW=0.9060E+01 BASIN STORAGE=0.1245E-03 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8W-4 MANE 0.85 96.14 247.40 0.89 3.00 95.60 249.00 0.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7653E+01 EXCESS=0.0000E+00 OUTFLOW=0.7655E+01 BASIN STORAGE=0.1199E-03 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R4-5 MANE 2.78 341.92 253.01 1.19 3.00 340.48 252.00 1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1923E+02 EXCESS=0.0000E+00 OUTFLOW=0.1934E+02 BASIN STORAGE=0.3703E-03 PERCENT ERROR= -0.6

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R4-5 MANE 2.78 338.84 253.21 1.18 3.00 337.96 252.00 1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1906E+02 EXCESS=0.0000E+00 OUTFLOW=0.1916E+02 BASIN STORAGE=0.4184E-03 PERCENT ERROR= -0.5

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R4-5 MANE 3.00 193.48 252.47 1.01 3.00 192.50 252.00 1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1647E+02 EXCESS=0.0000E+00 OUTFLOW=0.1651E+02 BASIN STORAGE=0.3235E-03 PERCENT ERROR= -0.2

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R5-6 MANE 2.88 465.68 257.00 1.28 3.00 461.39 258.00 1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4510E+02 EXCESS=0.0000E+00 OUTFLOW=0.4501E+02 BASIN STORAGE=0.5641E-01 PERCENT ERROR= 0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R5-6 MANE 2.88 462.64 257.18 1.27 3.00 458.66 258.00 1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4472E+02 EXCESS=0.0000E+00 OUTFLOW=0.4464E+02 BASIN STORAGE=0.5641E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R5-6 MANE 3.00 269.39 286.19 1.06 3.00 264.39 285.00 1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3723E+02 EXCESS=0.0000E+00 OUTFLOW=0.3723E+02 BASIN STORAGE=0.5640E-01 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R7E-8E MANE 2.48 8.47 267.86 0.41 3.00 8.45 270.00 0.41

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5640E+00 EXCESS=0.0000E+00 OUTFLOW=0.5642E+00 BASIN STORAGE=0.1424E-04 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R7E-8E MANE 2.49 8.36 268.11 0.40 3.00 8.32 270.00 0.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5555E+00 EXCESS=0.0000E+00 OUTFLOW=0.5565E+00 BASIN STORAGE=0.1227E-04 PERCENT ERROR= -0.2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R7E-8E MANE 3.00 0.79 281.23 0.04 3.00 0.79 282.00 0.04

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5136E-01 EXCESS=0.0000E+00 OUTFLOW=0.5564E-01 BASIN STORAGE=0.1218E-04 PERCENT ERROR= -8.4

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R9NR8E MANE 3.00 6.31 281.03 0.51 3.00 6.30 279.00 0.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7576E+00 EXCESS=0.0000E+00 OUTFLOW=0.7564E+00 BASIN STORAGE=0.1663E-04 PERCENT ERROR= 0.2

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R9NR8E MANE 3.00 6.24 281.18 0.50 3.00 6.22 279.00 0.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7487E+00 EXCESS=0.0000E+00 OUTFLOW=0.7475E+00 BASIN STORAGE=0.1891E-04 PERCENT ERROR= 0.2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R9NR8E MANE 3.00 1.69 287.45 0.14 3.00 1.68 288.00 0.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2051E+00 EXCESS=0.0000E+00 OUTFLOW=0.2049E+00 BASIN STORAGE=0.1591E-04 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8E-R9 MANE 0.31 34.65 276.05 0.43 3.00 34.65 276.00 0.43

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3043E+01 EXCESS=0.0000E+00 OUTFLOW=0.3043E+01 BASIN STORAGE=0.7386E-05 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8E-R9 MANE 0.31 34.16 276.08 0.43 3.00 34.16 276.00 0.43

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3001E+01 EXCESS=0.0000E+00 OUTFLOW=0.3002E+01 BASIN STORAGE=0.7554E-05 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8E-R9 MANE 0.73 4.44 286.10 0.06 3.00 4.42 285.00 0.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4419E+00 EXCESS=0.0000E+00 OUTFLOW=0.4419E+00 BASIN STORAGE=0.7013E-05 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
BSNRT1 MANE 0.43 176.85 541.04 0.53 3.00 176.85 543.00 0.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2055E+03 EXCESS=0.0000E+00 OUTFLOW=0.2055E+03 BASIN STORAGE=0.2436E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
BSNRT1 MANE 0.43 176.79 541.14 0.53 3.00 176.79 543.00 0.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2054E+03 EXCESS=0.0000E+00 OUTFLOW=0.2054E+03 BASIN STORAGE=0.2436E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
BSNRT1 MANE 0.47 172.81 544.06 0.52 3.00 172.80 543.00 0.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2012E+03 EXCESS=0.0000E+00 OUTFLOW=0.2012E+03 BASIN STORAGE=0.2435E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
BSNRT2 MANE 0.44 176.85 543.47 0.53 3.00 176.85 543.00 0.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2055E+03 EXCESS=0.0000E+00 OUTFLOW=0.2054E+03 BASIN STORAGE=0.2781E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
BSNRT2 MANE 0.44 176.78 543.55 0.53 3.00 176.78 543.00 0.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2054E+03 EXCESS=0.0000E+00 OUTFLOW=0.2054E+03 BASIN STORAGE=0.2781E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
BSNRT2 MANE 0.48 172.80 544.14 0.52 3.00 172.80 546.00 0.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2012E+03 EXCESS=0.0000E+00 OUTFLOW=0.2011E+03 BASIN STORAGE=0.2781E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R10-11 MANE 3.46 176.84 548.85 0.54 3.00 176.84 549.00 0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2080E+03 EXCESS=0.0000E+00 OUTFLOW=0.2075E+03 BASIN STORAGE=0.5529E+00 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R10-11 MANE 3.45 176.78 548.95 0.54 3.00 176.78 549.00 0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2079E+03 EXCESS=0.0000E+00 OUTFLOW=0.2074E+03 BASIN STORAGE=0.5529E+00 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R10-11 MANE 3.43 172.80 553.00 0.52 3.00 172.80 552.00 0.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2033E+03 EXCESS=0.0000E+00 OUTFLOW=0.2028E+03 BASIN STORAGE=0.5528E+00 PERCENT ERROR= 0.0

*** 1 ERROR(S) DETECTED BY HEC-1 ***

100yr-6hr-Ultimate

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* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*
* JUN 1998 *
*
* VERSION 4.1 *
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* RUN DATE 26APR21 TIME 08:56:05 *
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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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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID CROSS ROADS EAST DRAINAGE INFRASTRUCTURE
2 ID POWERLINE CORRIDOR
3 ID RESERVE ROUTING OF BASIN 53R N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ
4 ID INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:
5 ID 100-YR, 6-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND
6 ID PIMA ROAD FLOWS.
7 ID
8 ID PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14
9 ID MODELERS: RK, MW
10 ID
11 ID REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 11/14/18
12 ID MODELERS: MSW, ES
13 ID REVISIONS NOTED WITH HE
14 ID ULTIMATE CONDITION MODEL,WITH POWERLINE AND BASIN 53R AND
15 ID THIS IS THE POST-DEVELOPMENT MODEL WITH DEVELOPMENT N OF LEGACY
16 ID UPDATED INFLOW HYDROGRAPHS TO REFLECT 15MIN INC.
17 ID
18 ID REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 10/25/19
19 ID MODELERS: MSW
20 ID XKSAT ADJUSTMENT
21 ID
22 ID REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 07/15/20
23 ID MODELERS: MSW, TSW
24 ID REVISIONS NOTED WITH HE (Hubbard Engineering)
25 ID NEW PROPOSED CONDITION MODEL, ACCOUNT FOR WHAT HAS BEEN
26 ID CONSTRUCTED IN PHASE 1 INFRASTRUCTURE, DETAIL OUT NEW CP
27 ID ACCOUNT FOR HIGHER C FACTOR AND IMPERVIOUSNESS, ADD RETENTION
28 ID FIRST FLUSH RETENTION ADDED AS DIVERT CARD WITH VOLUME REQUIRED
29 ID
30 ID IT 3 0 0 1000
31 ID IN 15
32 ID IO 5
*DIAGRAM

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33	JD	2.755	0.0001								
34	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.074
35	PC	0.087	0.099	0.118	0.138	0.216	0.377	0.834	0.911	0.931	0.950
36	PC	0.962	0.972	0.983	0.991	1.000					
37	JD	2.738	0.5000								
38	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.074
39	PC	0.087	0.099	0.118	0.138	0.216	0.377	0.834	0.911	0.931	0.950
40	PC	0.962	0.972	0.983	0.991	1.000					
41	JD	2.686	2.8								
42	PC	0.000	0.009	0.016	0.025	0.034	0.042	0.051	0.059	0.068	0.077
43	PC	0.088	0.101	0.121	0.164	0.253	0.451	0.694	0.836	0.900	0.938
44	PC	0.950	0.963	0.975	0.988	1.000					
45	JD	2.540	16.0								
46	PC	0.000	0.015	0.020	0.030	0.048	0.063	0.076	0.090	0.105	0.119
47	PC	0.135	0.152	0.175	0.222	0.304	0.472	0.670	0.796	0.868	0.912
48	PC	0.946	0.960	0.973	0.987	1.000					
49	JD	2.232	90.0								
50	PC	0.000	0.021	0.035	0.051	0.071	0.087	0.105	0.125	0.143	0.160
51	PC	0.179	0.201	0.232	0.281	0.364	0.500	0.658	0.773	0.841	0.888
52	PC	0.927	0.945	0.964	0.982	1.000					
53	JD	3.657	10.0								

HEC-1 INPUT

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

54	JD	3.533	20.0								
	*										
55	KK	76THST									
56	KM	76TH ST CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS									
57	KM	100-YR, 6-HR FLO-2D MODEL (XS 98)									
58	BA	0.24									
59	QI	0	0	0	0	0	0	0	0	0	0
60	QI	0	0	0.01	0.01	0.09	0.9	12.7	42.26	49.92	48.6
61	QI	34.49	26.72	21.55	17.51	14.81	12.84	11.63	10.56	9.58	8.32
62	QI	7.29	6.73	5.83	4.76	4.23	3.81	3.4	3.55	2.36	2.51
63	QI	2.32	2.16	2.02	1.83	1.58	1.5	1.52	1.21	1.31	1.34
64	QI	1.09	1.07	1.04	0.97	0.91	0.86	0.83	0.79	0.76	0.72
65	QI	0.69	0.67	0.65	0.62	0.6	0.58	0.55	0.53	0.51	0.49
66	QI	0.47	0.45	0.44							
	*										
67	KK	SB01A	BASIN								
68	BA	0.061									
69	PB	2.721									
70	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.075
71	PC	0.087	0.099	0.119	0.150	0.234	0.413	0.766	0.875	0.916	0.944
72	PC	0.956	0.968	0.979	0.990	1.000					
73	LG	0.25	0.25	4.03	0.56	45					
74	UC	0.439	0.231								
75	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
76	UA	100									
	*										
77	KK	SB01A	DIVERT								
78	KM	DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01A									
79	KM	FIRST FLUSH VOL = 1.383 AC-FT									
80	DT	RET01A	1.383								
81	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
82	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
83	KK	CP-1	COMBINE								
84	KM	LEGACY BLVD AND 76TH ST (MILLER RD CHANNEL)									
85	HC	2	0.301								
	*										
86	KK	R1A-2W	ROUTE								
87	KM	ROUTE CP-1 TO CP-2W									
88	RK	1114	0.0200	0.018		TRAP	2.000	0.00			
	*										
89	KK	SB02NW	BASIN								
90	KM	BASIN SB02E WAS SPLIT INTO SUB BASINS NORTH OF CAVASSON									
91	KM	AND SOUTH OF CAVASSON									
92	BA	0.0193									
93	LG	0.25	0.25	4.03	0.56	45					
94	UC	0.172	0.133								
95	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0

96 UA 100
*

HEC-1 INPUT

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

97 KK SB02NW DIVERT
98 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02NW
99 KM FIRST FLUSH VOL = 0.437 AC-FT
100 DT RET2NW 0.437
101 DI 0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0
102 DI 50.0 55.0 60.0 65.0 70.0 80.0 90.0 100.0 150.0 200.0
103 DQ 0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0
104 DQ 50.0 55.0 60.0 65.0 70.0 80.0 90.0 100.0 150.0 200.0
*

105 KK CP-02W COMBINE
106 KM COMBINE ROUTE FROM 1A-2W WITH NEW SUB BASIN SB02NW
107 HC 2 0.305
*

108 KK R2W-2 ROUTE
109 RK 1380 0.0140 0.018 TRAP 2.000 0.00
*

110 KK SB01C BASIN
111 BA 0.027
112 LG 0.25 0.25 4.03 0.56 45
113 UC 0.215 0.216
114 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
115 UA 100
*

116 KK SB01C DIVERT
117 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01C
118 KM FIRST FLUSH VOL = 0.612 AC-FT
119 DT RET01C 0.612
120 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
121 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

122 KK R1C-1B ROUTE
123 KM KO 2 2
124 RK 542 0.005 0.013 CIRC 5.000
*

125 KK SB01B BASIN
126 BA 0.024
127 LG 0.25 0.25 4.03 0.56 45
128 UC 0.191 0.178
129 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
130 UA 100
*

131 KK SB01B DIVERT
132 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01B
133 KM FIRST FLUSH VOL = 0.543 AC-FT
134 DT RET01B 0.543
135 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
136 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

1

HEC-1 INPUT

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

137 KK CP-01B COMBINE
138 KM COMBINE ROUTE FROM 1C-1B WITH NEW SUB BASIN SB01B
139 HC 2 0.051
*

140 KK R1B-2N ROUTE
141 KM KO 2 2
142 RK 2144 0.008 0.013 CIRC 5.000
*

143 KK SB02NE BASIN
144 BA 0.0335
145 LG 0.25 0.25 4.03 0.56 45

146	UC	0.255	0.267								
147	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
148	UA	100									
	*										
149	KK	SB02NE	DIVERT								
150	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02NE								
151	KM		FIRST FLUSH VOL = 0.760 AC-FT								
152	DT	RET2NE	0.760								
153	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
154	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										
155	KK	CP-02N	COMBINE								
156	KM		COMBINE ROUTE 1B-2N (BASINS SB01-B AND SB01-C) WITH SB02NE								
157	HC	2	0.085								
	*										
158	KK	R2N-2	ROUTE								
159	RK	1380	0.014	0.018		TRAP	2.000	0.00			
	*										
160	KK	SB02E	BASIN								
161	BA	0.040									
162	LG	0.10	0.25	4.03	0.61	80					
163	UC	0.214	0.175								
164	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
165	UA	100									
	*										
166	KK	SB02E	DIVERT								
167	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02E								
168	KM		FIRST FLUSH VOL = 0.998 AC-FT								
169	DT	RET2E	0.998								
170	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
171	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										

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HEC-1 INPUT

LINE	ID.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....	8.....	9.....	10
172	KK	SB02W	BASIN								
173	BA	0.0571									
174	LG	0.35	0.35	4.33	0.51	0					
175	UC	0.686	0.535								
176	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
177	UA	100									
	*										
178	KK	CP-02	COMBINE								
179	HC	4	0.1816								
	*										
180	KK	R2-3	ROUTE								
181	KM		MILLER RD CHANNEL FROM SR 101L FREEWAY TO MAYO BLVD								
182	RK	1260	0.0015	0.030		TRAP	92	4			
	*										
183	KK	SB03	BASIN								
184	BA	0.048									
185	LG	0.15	0.25	4.50	0.47	55					
186	UC	0.364	0.294								
187	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
188	UA	100									
	*										
189	KK	CP-03	COMBINE								
190	HC	2									
	*										
191	KK	R3-5	ROUTE								
192	KM		MILLER RD CHANNEL FROM MAYO BLVD TO PRINCESS BLVD								
193	RK	2396	0.0015	0.03		TRAP	98	4			
	*										
194	KK	SB05	BASIN								
195	BA	0.126									
196	LG	0.22	0.25	4.50	0.44	48					
197	UC	0.327	0.226								

198	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
199	UA	100									
	*										
200	KK	CP-5A	COMBINE								
201	HC	2									
	*										
202	KK	SB07W	BASIN								
203	BA	0.0468									
204	LG	0.25	0.25	4.03	0.56	45					
205	UC	0.203	0.141								
206	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
207	UA	100									
	*										

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HEC-1 INPUT

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

208	KK	SB07W	DIVERT								
209	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB07W								
210	KM		FIRST FLUSH VOL = 1.060 AC-FT								
211	DT	RET07W	1.060								
212	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
213	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										

214	KK	R7W-8W	ROUTE								
215	KM		HAYDEN ROAD NORTH CHANNEL FROM LEGACY BLVD TO SR 101L FREEWAY								
216	KM		HE MODIFIED ROUTE TO LOOP 101 W OF HAYDEN								
217	RK	3754	0.0013	0.03			TRAP	46	4		
	*										

218	KK	SB8NW	BASIN								
219	KM		BASIN JUST SOUTH OF LEGACY - FUTURE MOB SITE								
220	BA	0.0147									
221	LG	0.10	0.25	4.03	0.61	80					
222	UC	0.144	0.108								
223	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
224	UA	100									
	*										

225	KK	SB8NW	DIVERT								
226	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8NW								
227	KM		FIRST FLUSH VOL = 0.332 AC-FT								
228	DT	RET8NW	0.332								
229	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
230	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										

231	KK	R8NW8N	ROUTE								
232	KM		ROUTE NEW SUB BASIN SB8NW TO OUTLET AT CAVASSON BLVD								
233	KM		NORTH HALF OF BASIN 8W WAS BROKEN DOWN INTO 4 SUB-SUBBASINS								
234	RK	643	0.0113	0.018			TRAP	46	4		
	*										

235	KK	SB8NE	BASIN								
236	KM		SITE JUST SOUTH OF LEGACY AND WEST OF HAYDEN - FUTURE RETAIL								
237	BA	0.015									
238	LG	0.10	0.25	4.03	0.61	80					
239	UC	0.138	0.094								
240	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
241	UA	100									
	*										

242	KK	SB8NE	DIVERT								
243	KM		DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8NE								
244	KM		FIRST FLUSH VOL = 0.340 AC-FT								
245	DT	RET8NE	0.340								
246	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
247	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
	*										

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HEC-1 INPUT

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

248	KK	R8NE8N	ROUTE								
249	KM		ROUTE NEW SUB BASIN SB8NE TO OUTLET AT CAVASSON BLVD								

250 KM NORTH HALF OF BASIN 8W WAS BROKEN DOWN INTO 4 SUB-SUBBASINS
251 RK 622 0.011 0.018 TRAP 46 4
*

252 KK SB8SW BASIN
253 KM SITE JUST NORTH OF CAVASSON BLVD EAST OF CLARET DR - FUTURE MF
254 BA 0.0129
255 LG 0.10 0.25 4.03 0.61 80
256 UC 0.126 0.091
257 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
258 UA 100
*

259 KK SB8SW DIVERT
260 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8SW
261 KM FIRST FLUSH VOL = 0.292 AC-FT
262 DT RET8SW 0.292
263 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
264 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

265 KK SB8SE BASIN
266 KM SITE JUST NORTH OF CAVASSON AND WEST OF HAYDEN - FUTURE HOTEL OR RETAIL
267 BA 0.0131
268 LG 0.10 0.25 4.03 0.61 80
269 UC 0.139 0.113
270 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
271 UA 100
*

272 KK SB8SE DIVERT
273 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8SE
274 KM FIRST FLUSH VOL = 0.297 AC-FT
275 DT RET8SE 0.297
276 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
277 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

278 KK CP-08N COMBINE
279 KM CP AT INLET ON NORTH SIDE OF CAVASSON - ENTERS EXIST STORM DRAIN
280 HC 4 0.0557
*

281 KK R8N-8W ROUTE
282 KM ROUTE NEW SUB BASINS SB8NE SB8NW SB8SW SB8SE TO CP-08W
283 KM ROUTE IN STORM DRAIN
284 RK 1592 0.015 0.013 CIRC 3
*

HEC-1 INPUT

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

285 KK SB08W BASIN
286 BA 0.0589
287 LG 0.10 0.25 4.03 0.61 80
288 UC 0.221 0.146
289 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
290 UA 100
*

291 KK SB08W DIVERT
292 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB08W
293 KM FIRST FLUSH VOL REQ = 1.335 AC-FT, PROVIDED = 1.415
294 KM THIS IS EXISTING AND WAS BUILT IN PHASE 1
295 DT RET8W 1.415
296 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
297 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

298 KK CP-08W COMBINE
299 HC 3 0.1614
*

300 KK R8W-4 ROUTE
301 RK 3137 0.0130 0.030 TRAP 2.000 0.00
*

302 KK SB04 BASIN

303	BA	0.144									
304	LG	0.14	0.25	4.60	0.44	61					
305	UC	0.305	0.199								
306	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
307	UA	100									
	*										
308	KK	CP-4	COMBINE								
309	HC	2									
	*										
310	KK	R4-5	ROUTE								
311	KM	PRINCESS	BLVD CHANNEL FROM 77TH ST TO 76TH ST								
312	RK	1992	0.0013	0.03		TRAP	39	4			
	*										
313	KK	CP-05	COMBINE								
314	KM	PRINCESS BLVD AND 76TH ST (PRINCESS BLVD CHANNEL)									
315	KM	COMBINE CP-05A AND R4-5									
316	HC	2									
	*										

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HEC-1 INPUT

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

317	KK	R5-6	ROUTE								
318	KM	PRINCESS	BLVD CHANNEL FROM 76TH ST TO SCOTTSDALE RD								
319	RK	1694	0.0015	0.03		TRAP	188	4			
	*										
320	KK	SB06	BASIN								
321	BA	0.136									
322	LG	0.16	0.25	4.55	0.45	53					
323	UC	0.321	0.246								
324	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
325	UA	100									
	*										
326	KK	CP-06	COMBINE								
327	HC	2									
	*										
328	KK	SB07E	BASIN								
329	BA	0.026									
330	LG	0.10	0.25	4.03	0.74	0					
331	UC	0.574	0.527								
332	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
333	UA	100									
	*										
334	KK	R7E-8E	ROUTE								
335	RK	3662	0.0130	0.030		TRAP	2.000	0.00			
	*										
336	KK	SB08E	BASIN								
337	BA	0.078									
338	LG	0.10	0.25	4.08	0.72	0					
339	UC	0.798	0.652								
340	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
341	UA	100									
	*										
342	KK	SB09N	BASIN								
343	BA	0.028									
344	LG	0.10	0.25	4.79	0.49	0					
345	UC	0.740	1.111								
346	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
347	UA	100									
	*										
348	KK	R9N-R9	ROUTE								
349	RK	2586	0.0013	0.020		TRAP	2.000	0.00			
	*										

1

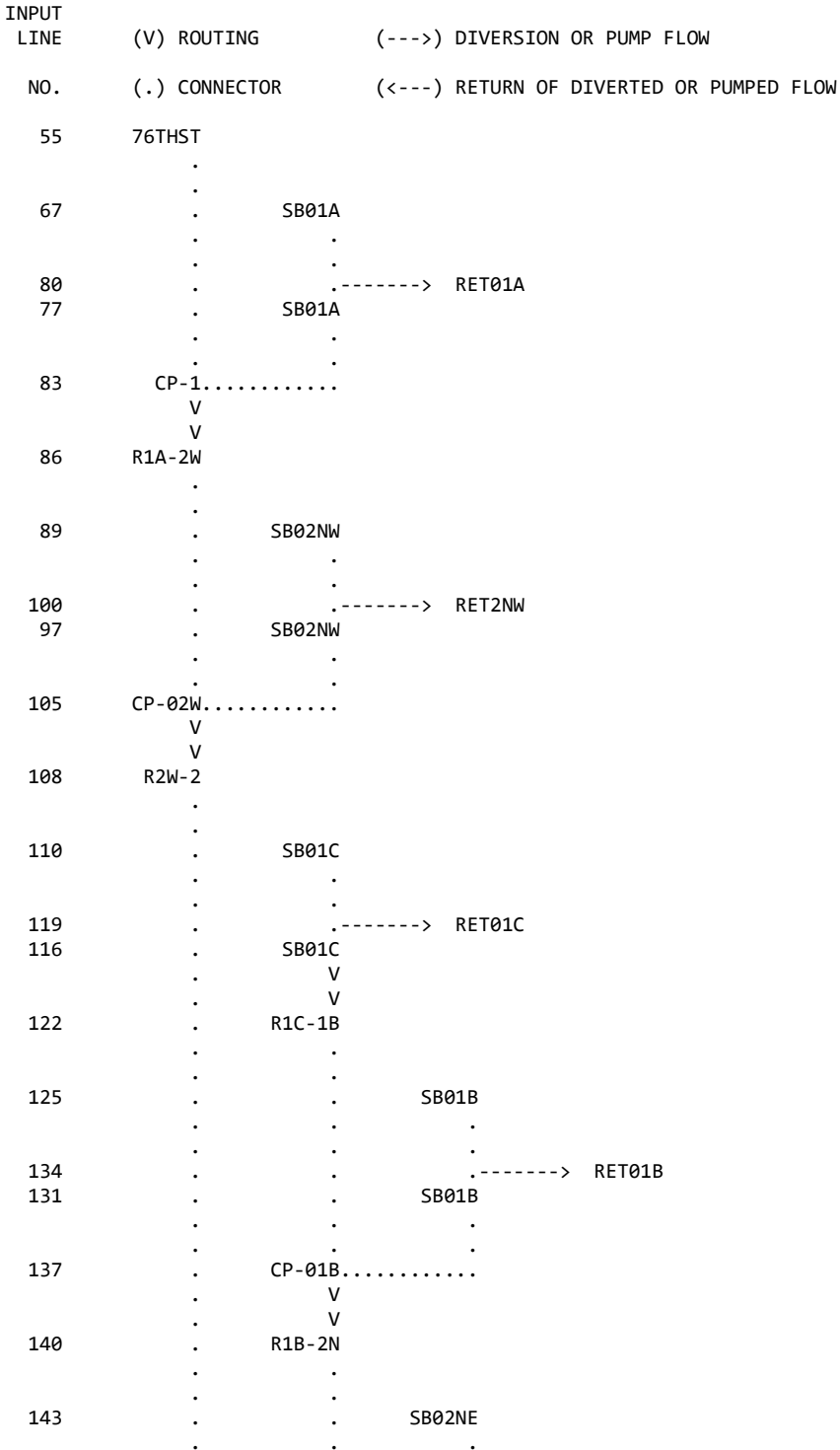
HEC-1 INPUT

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

350	KK	CP-08E	COMBINE								
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406	KK	R10-11	ROUTE										
407	KM		UNION HILLS DR CHANNEL FROM 82ND ST TO HAYDEN ROAD										
408	RK	1277	0.0014	0.03		TRAP	220	4					
	*												
409	KK	SB11	BASIN										
410	BA	0.071											
411	LG	0.15	0.25	4.15	0.58	55							
412	UC	0.296	0.232										
413	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0		
414	UA	100											
	*												
415	KK	CP-11	COMBINE										
416	KM		UNION HILLS DR AND HAYDEN ROAD (HAYDEN RD SOUTH CHANNEL)										
417	HC	2	0.3										
	*												
418	ZZ												

1
SCHEMATIC DIAGRAM OF STREAM NETWORK



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152 . . . . .
149 . . . . . SB02NE .-----> RET2NE
. . . . .
155 . . . . . CP-02N.....
. . . . . V
. . . . . V
158 . . . . . R2N-2
. . . . .
160 . . . . . SB02E
. . . . .
169 . . . . . .-----> RET2E
166 . . . . . SB02E
. . . . .
172 . . . . . SB02W
. . . . .
178 CP-02.....
. . . . . V
. . . . . V
180 . . . . . R2-3
. . . . .
183 . . . . . SB03
. . . . .
189 CP-03.....
. . . . . V
. . . . . V
191 . . . . . R3-5
. . . . .
194 . . . . . SB05
. . . . .
200 CP-5A.....
. . . . .
202 . . . . . SB07W
. . . . .
211 . . . . . .-----> RET07W
208 . . . . . SB07W
. . . . . V
. . . . . V
214 . . . . . R7W-8W
. . . . .
218 . . . . . SB8NW
. . . . .
228 . . . . . .-----> RET8NW
225 . . . . . SB8NW
. . . . . V
. . . . . V
231 . . . . . R8NW8N
. . . . .
235 . . . . . SB8NE
. . . . .
245 . . . . . .-----> RET8NE
242 . . . . . SB8NE
. . . . . V
. . . . . V
248 . . . . . R8NE8N
. . . . .
252 . . . . . SB8SW
. . . . .
262 . . . . . .-----> RET8SW
259 . . . . . SB8SW
. . . . .
265 . . . . . SB8SE

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.      .      .      .      .      .
275 .      .      .      .      .      .-----> RET8SE
272 .      .      .      .      .      SB8SE
.      .      .      .      .      .
278 .      .      CP-08N.....
.      .      V
.      .      V
281 .      .      R8N-8W
.      .      .
.      .      .      .      .      SB08W
.      .      .      .      .      .
295 .      .      .      .      .-----> RET8W
291 .      .      .      .      .      SB08W
.      .      .      .      .      .
298 .      .      CP-08W.....
.      .      V
.      .      V
300 .      .      R8W-4
.      .      .
.      .      .      .      .      SB04
.      .      .      .      .      .
308 .      .      CP-4.....
.      .      V
.      .      V
310 .      .      R4-5
.      .      .
.      .      .
313 CP-05.....
.      .      V
.      .      V
317 R5-6
.      .      .
.      .      .      .      .      SB06
.      .      .      .      .      .
326 CP-06.....
.      .      .
.      .      .      .      .      SB07E
.      .      .      .      .      V
.      .      .      .      .      V
334 .      .      R7E-8E
.      .      .
.      .      .      .      .      SB08E
.      .      .      .      .      .
.      .      .      .      .      .      SB09N
.      .      .      .      .      V
.      .      .      .      .      V
348 .      .      .      .      .      R9N-R9
.      .      .      .      .      .
.      .      .      .      .      .
350 .      .      CP-08E.....
.      .      V
.      .      V
352 .      .      R8E-R9
.      .      .
.      .      .      .      .      SB09
.      .      .      .      .      .
360 .      .      CP-09.....
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.      .      .      .      .      PWRCH
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.      .      .      .      .      .
374 .      .      BINFLO.....
.      .      V
.      .      V
377 .      .      BASIN

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      .      V
      .      V
389   .      BSNRT1
      .      V
      .      V
394   .      BSNRT2
      .      .
      .      .
397   .      .      SB10
      .      .      .
      .      .      .
403   .      CP-10.....
      .      V
      .      V
406   .      R10-11
      .      .
      .      .
409   .      .      SB11
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      .      .      .
415   .      CP-11.....

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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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1*****
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* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*
* JUN 1998 *
*
* VERSION 4.1 *
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* RUN DATE 26APR21 TIME 08:56:05 *
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*
* U.S. ARMY CORPS OF ENGINEERS
*
* HYDROLOGIC ENGINEERING CENTER
*
* 609 SECOND STREET
*
* DAVIS, CALIFORNIA 95616
*
* (916) 756-1104
*
*

```

CROSS ROADS EAST DRAINAGE INFRASTRUCTURE
POWERLINE CORRIDOR
RESERVE ROUTING OF BASIN 53R N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ
INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:
100-YR, 6-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND
PIMA ROAD FLOWS.

PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14
MODELERS: RK, MW

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 11/14/18
MODELERS: MSW, ES
REVISIONS NOTED WITH HE
ULTIMATE CONDITION MODEL, WITH POWERLINE AND BASIN 53R AND
THIS IS THE POST-DEVELOPMENT MODEL WITH DEVELOPMENT N OF LEGACY
UPDATED INFLOW HYDROGRAPHS TO REFLECT 15MIN INC.

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 10/25/19
MODELERS: MSW
XKSAT ADJUSTMENT

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 07/15/20
MODELERS: MSW, TSW
REVISIONS NOTED WITH HE (Hubbard Engineering)
NEW PROPOSED CONDITION MODEL, ACCOUNT FOR WHAT HAS BEEN
CONSTRUCTED IN PHASE 1 INFRASTRUCTURE, DETAIL OUT NEW CP
ACCOUNT FOR HIGHER C FACTOR AND IMPERVIOUSNESS, ADD RETENTION
FIRST FLUSH RETENTION ADDED AS DIVERT CARD WITH VOLUME REQUIRED

```

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

```

IT HYDROGRAPH TIME DATA
 NMIN 3 MINUTES IN COMPUTATION INTERVAL
 IDATE 1 0 STARTING DATE
 ITIME 0000 STARTING TIME
 NQ 1000 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 3 0 ENDING DATE
 NDTIME 0157 ENDING TIME
 ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.05 HOURS
 TOTAL TIME BASE 49.95 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

33 JD INDEX STORM NO. 1
 STRM 2.76 PRECIPITATION DEPTH
 TRDA 0.00 TRANSPOSITION DRAINAGE AREA

34 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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 0.00 0.00 0.00 0.00 0.00 0.02 0.02 0.02 0.02 0.02
 0.03 0.03 0.03 0.03 0.03 0.09 0.09 0.09 0.09 0.09
 0.02 0.02 0.02 0.02 0.02 0.00 0.00 0.00 0.00 0.00
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37 JD INDEX STORM NO. 2
 STRM 2.74 PRECIPITATION DEPTH
 TRDA 0.50 TRANSPOSITION DRAINAGE AREA

38 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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41 JD INDEX STORM NO. 3
 STRM 2.69 PRECIPITATION DEPTH
 TRDA 2.80 TRANSPOSITION DRAINAGE AREA

42 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02
 0.04 0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05 0.05
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45 JD INDEX STORM NO. 4
 STRM 2.54 PRECIPITATION DEPTH
 TRDA 16.00 TRANSPOSITION DRAINAGE AREA

46 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02
 0.03 0.03 0.03 0.03 0.03 0.04 0.04 0.04 0.04 0.04
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49 JD INDEX STORM NO. 5
 STRM 2.23 PRECIPITATION DEPTH
 TRDA 90.00 TRANSPOSITION DRAINAGE AREA

50 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02
 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
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53 JD INDEX STORM NO. 6
 STRM 3.66 PRECIPITATION DEPTH
 TRDA 10.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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54 JD INDEX STORM NO. 7
 STRM 3.53 PRECIPITATION DEPTH
 TRDA 20.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 27

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 10

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 2

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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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								
	76THST	50.	4.50	15.	4.	2.	0.24		
+	HYDROGRAPH AT								
	SB01A	103.	4.25	12.	3.	1.	0.06		
+	DIVERSION TO								
	RET01A	44.	4.05	3.	1.	0.	0.06		
+	HYDROGRAPH AT								
	SB01A	103.	4.25	9.	2.	1.	0.06		
+	2 COMBINED AT								
	CP-1	145.	4.25	24.	7.	3.	0.30		
+	ROUTED TO								
	R1A-2W	144.	4.30	24.	7.	3.	0.30		
+	HYDROGRAPH AT								
	SB02NW	43.	4.05	4.	1.	0.	0.02		
+	DIVERSION TO								
	RET2NW	14.	3.85	1.	0.	0.	0.02		

+	HYDROGRAPH AT	SB02NW	43.	4.05	3.	1.	0.	0.02
+	2 COMBINED AT	CP-02W	164.	4.25	27.	7.	4.	0.31
+	ROUTED TO	R2W-2	163.	4.25	27.	7.	4.	0.31
+	HYDROGRAPH AT	SB01C	51.	4.10	5.	1.	1.	0.03
+	DIVERSION TO	RET01C	20.	3.90	1.	0.	0.	0.03
+	HYDROGRAPH AT	SB01C	51.	4.10	4.	1.	0.	0.03
+	ROUTED TO	R1C-1B	50.	4.10	4.	1.	0.	0.03
+	HYDROGRAPH AT	SB01B	50.	4.10	5.	1.	1.	0.02
+	DIVERSION TO	RET01B	17.	3.90	1.	0.	0.	0.02
+	HYDROGRAPH AT	SB01B	50.	4.10	3.	1.	0.	0.02
+	2 COMBINED AT	CP-01B	100.	4.10	7.	2.	1.	0.05
+	ROUTED TO	R1B-2N	97.	4.15	7.	2.	1.	0.05
+	HYDROGRAPH AT	SB02NE	57.	4.15	6.	2.	1.	0.03
+	DIVERSION TO	RET2NE	27.	3.95	2.	0.	0.	0.03
+	HYDROGRAPH AT	SB02NE	57.	4.15	5.	1.	1.	0.03
+	2 COMBINED AT	CP-02N	154.	4.15	12.	3.	1.	0.09
+	ROUTED TO	R2N-2	154.	4.15	12.	3.	1.	0.09
+	HYDROGRAPH AT	SB02E	93.	4.10	10.	3.	1.	0.04
+	DIVERSION TO	RET2E	22.	3.70	2.	1.	0.	0.04
+	HYDROGRAPH AT	SB02E	93.	4.10	8.	2.	1.	0.04
+	HYDROGRAPH AT	SB02W	39.	4.50	6.	1.	1.	0.06
+	4 COMBINED AT	CP-02	395.	4.15	53.	14.	7.	0.18
+	ROUTED TO	R2-3	388.	4.25	53.	14.	7.	0.18
+	HYDROGRAPH AT	SB03	78.	4.15	10.	3.	1.	0.05
+	2 COMBINED AT	CP-03	458.	4.20	62.	16.	8.	0.23
+	ROUTED TO	R3-5	454.	4.35	62.	16.	8.	0.23
+	HYDROGRAPH AT	SB05	229.	4.10	25.	6.	3.	0.13

+	2 COMBINED AT	CP-5A	581.	4.30	85.	23.	11.	0.36
+	HYDROGRAPH AT	SB07W	104.	4.10	9.	2.	1.	0.05
+	DIVERSION TO	RET07W	29.	3.85	2.	1.	0.	0.05
+	HYDROGRAPH AT	SB07W	104.	4.10	7.	2.	1.	0.05
+	ROUTED TO	R7W-8W	104.	4.45	8.	2.	1.	0.05
+	HYDROGRAPH AT	SB8NW	40.	4.05	4.	1.	0.	0.01
+	DIVERSION TO	RET8NW	6.	3.55	1.	0.	0.	0.01
+	HYDROGRAPH AT	SB8NW	40.	4.05	3.	1.	0.	0.01
+	ROUTED TO	R8NW8N	39.	4.05	3.	1.	0.	0.01
+	HYDROGRAPH AT	SB8NE	42.	4.05	4.	1.	0.	0.01
+	DIVERSION TO	RET8NE	6.	3.55	1.	0.	0.	0.01
+	HYDROGRAPH AT	SB8NE	42.	4.05	3.	1.	0.	0.01
+	ROUTED TO	R8NE8N	42.	4.05	3.	1.	0.	0.01
+	HYDROGRAPH AT	SB8SW	37.	4.05	3.	1.	0.	0.01
+	DIVERSION TO	RET8SW	5.	3.55	1.	0.	0.	0.01
+	HYDROGRAPH AT	SB8SW	37.	4.05	3.	1.	0.	0.01
+	HYDROGRAPH AT	SB8SE	36.	4.05	3.	1.	0.	0.01
+	DIVERSION TO	RET8SE	5.	3.55	1.	0.	0.	0.01
+	HYDROGRAPH AT	SB8SE	36.	4.05	3.	1.	0.	0.01
+	4 COMBINED AT	CP-08N	153.	4.05	12.	3.	1.	0.06
+	ROUTED TO	R8N-8W	150.	4.05	12.	3.	1.	0.06
+	HYDROGRAPH AT	SB08W	145.	4.10	15.	4.	2.	0.06
+	DIVERSION TO	RET8W	27.	3.65	3.	1.	0.	0.06
+	HYDROGRAPH AT	SB08W	145.	4.10	12.	3.	1.	0.06
+	3 COMBINED AT	CP-08W	287.	4.10	32.	8.	4.	0.16
+	ROUTED TO	R8W-4	287.	4.10	32.	8.	4.	0.16
+	HYDROGRAPH AT							

+		SB04	292.	4.10	32.	8.	4.	0.14
	2 COMBINED AT							
+		CP-4	578.	4.10	64.	16.	8.	0.31
	ROUTED TO							
+		R4-5	567.	4.15	64.	16.	8.	0.31
	2 COMBINED AT							
+		CP-05	951.	4.30	146.	38.	19.	0.66
	ROUTED TO							
+		R5-6	926.	4.35	146.	38.	18.	0.66
	HYDROGRAPH AT							
+		SB06	243.	4.10	29.	7.	3.	0.14
	2 COMBINED AT							
+		CP-06	1020.	4.35	171.	45.	22.	0.80
	HYDROGRAPH AT							
+		SB07E	19.	4.40	3.	1.	0.	0.03
	ROUTED TO							
+		R7E-8E	19.	4.45	3.	1.	0.	0.03
	HYDROGRAPH AT							
+		SB08E	46.	4.55	8.	2.	1.	0.08
	HYDROGRAPH AT							
+		SB09N	13.	4.55	3.	1.	0.	0.03
	ROUTED TO							
+		R9N-R9	13.	4.65	3.	1.	0.	0.03
	3 COMBINED AT							
+		CP-08E	76.	4.55	13.	3.	2.	0.13
	ROUTED TO							
+		R8E-R9	76.	4.55	13.	3.	2.	0.13
	HYDROGRAPH AT							
+		SB09	71.	4.45	10.	2.	1.	0.09
	2 COMBINED AT							
+		CP-09	144.	4.50	23.	6.	3.	0.22
	HYDROGRAPH AT							
+		PWRCH	738.	5.75	429.	135.	74.	7.00
	2 COMBINED AT							
+		BINFLO	749.	5.75	439.	138.	76.	7.22
	ROUTED TO							
+		BASIN	241.	9.20	228.	130.	73.	7.22
	ROUTED TO							
+		BSNRT1	241.	9.25	228.	130.	73.	7.22
	ROUTED TO							
+		BSNRT2	241.	9.25	228.	130.	73.	7.22
	HYDROGRAPH AT							
+		SB10	87.	4.05	8.	2.	1.	0.04
	2 COMBINED AT							
+		CP-10	244.	9.20	232.	133.	76.	0.23
	ROUTED TO							
+		R10-11	244.	9.30	232.	133.	76.	0.23
	HYDROGRAPH AT							
+		SB11	130.	4.10	15.	4.	2.	0.07
	2 COMBINED AT							
+		CP-11	244.	9.30	232.	136.	77.	0.30

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SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
INTERPOLATED TO

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	DT (MIN)	COMPUTATION	INTERVAL	VOLUME
							PEAK (CFS)	TIME TO PEAK (MIN)		(IN)
FOR STORM = 1	STORM AREA (SQ MI) =			0.00					
R1A-2W	MANE	0.31	145.99	255.52	0.86	3.00	145.05	258.00	0.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1385E+02 EXCESS=0.0000E+00 OUTFLOW=0.1385E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 2	STORM AREA (SQ MI) =			0.50					
R1A-2W	MANE	0.31	145.24	255.66	0.86	3.00	144.23	258.00	0.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1380E+02 EXCESS=0.0000E+00 OUTFLOW=0.1380E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 3	STORM AREA (SQ MI) =			2.80					
R1A-2W	MANE	0.30	102.74	258.17	0.82	3.00	102.70	258.00	0.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1311E+02 EXCESS=0.0000E+00 OUTFLOW=0.1311E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 4	STORM AREA (SQ MI) =			16.00					
R1A-2W	MANE	0.30	86.26	258.55	0.77	3.00	86.14	258.00	0.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1240E+02 EXCESS=0.0000E+00 OUTFLOW=0.1240E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 5	STORM AREA (SQ MI) =			90.00					
R1A-2W	MANE	0.35	70.99	270.31	0.71	3.00	70.97	270.00	0.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1143E+02 EXCESS=0.0000E+00 OUTFLOW=0.1143E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 6	STORM AREA (SQ MI) =			10.00					
R1A-2W	MANE	0.22	101.82	261.19	0.92	3.00	101.82	261.00	0.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1483E+02 EXCESS=0.0000E+00 OUTFLOW=0.1483E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 7	STORM AREA (SQ MI) =			20.00					
R1A-2W	MANE	0.27	99.04	261.08	0.90	3.00	99.04	261.00	0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1451E+02 EXCESS=0.0000E+00 OUTFLOW=0.1451E+02 BASIN STORAGE=0.2984E-02 PERCENT ERROR= 0.0

FOR STORM = 1	STORM AREA (SQ MI) =			0.00					
R2W-2	MANE	0.36	164.36	255.38	0.94	3.00	163.85	255.00	0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1526E+02 EXCESS=0.0000E+00 OUTFLOW=0.1526E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 2	STORM AREA (SQ MI) =			0.50					
R2W-2	MANE	0.27	163.57	255.50	0.93	3.00	162.94	255.00	0.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1520E+02 EXCESS=0.0000E+00 OUTFLOW=0.1520E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 3	STORM AREA (SQ MI) =			2.80					
R2W-2	MANE	0.35	117.20	258.14	0.88	3.00	117.19	258.00	0.88

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1428E+02 EXCESS=0.0000E+00 OUTFLOW=0.1428E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 4	STORM AREA (SQ MI) =			16.00					
R2W-2	MANE	0.38	96.83	258.51	0.82	3.00	96.72	258.00	0.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1335E+02 EXCESS=0.0000E+00 OUTFLOW=0.1335E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R2W-2 MANE 0.37 75.72 261.93 0.74 3.00 75.66 261.00 0.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1207E+02 EXCESS=0.0000E+00 OUTFLOW=0.1206E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R2W-2 MANE 0.24 117.87 258.45 1.02 3.00 117.68 258.00 1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1655E+02 EXCESS=0.0000E+00 OUTFLOW=0.1655E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R2W-2 MANE 0.24 114.22 258.50 0.99 3.00 114.02 258.00 0.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1613E+02 EXCESS=0.0000E+00 OUTFLOW=0.1613E+02 BASIN STORAGE=0.4391E-02 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R1C-1B MANE 0.30 51.03 246.76 1.36 3.00 50.29 246.00 1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1961E+01 EXCESS=0.0000E+00 OUTFLOW=0.1962E+01 BASIN STORAGE=0.1121E-13 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R1C-1B MANE 0.40 50.59 246.72 1.35 3.00 49.89 246.00 1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1941E+01 EXCESS=0.0000E+00 OUTFLOW=0.1942E+01 BASIN STORAGE=0.1138E-13 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R1C-1B MANE 0.42 27.84 246.95 1.13 3.00 27.64 249.00 1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1632E+01 EXCESS=0.0000E+00 OUTFLOW=0.1631E+01 BASIN STORAGE=0.1119E-13 PERCENT ERROR= 0.1

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R1C-1B MANE 0.40 19.93 246.90 0.91 3.00 19.81 249.00 0.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1321E+01 EXCESS=0.0000E+00 OUTFLOW=0.1317E+01 BASIN STORAGE=0.1123E-13 PERCENT ERROR= 0.3

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R1C-1B MANE 0.50 11.56 247.25 0.62 3.00 11.55 249.00 0.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8898E+00 EXCESS=0.0000E+00 OUTFLOW=0.8904E+00 BASIN STORAGE=0.1117E-13 PERCENT ERROR= -0.1

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R1C-1B MANE 0.35 26.68 246.72 1.66 3.00 26.64 249.00 1.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2396E+01 EXCESS=0.0000E+00 OUTFLOW=0.2395E+01 BASIN STORAGE=0.1140E-13 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R1C-1B MANE 0.32 25.38 246.62 1.57 3.00 25.34 249.00 1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2256E+01 EXCESS=0.0000E+00 OUTFLOW=0.2254E+01 BASIN STORAGE=0.1122E-13 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R1B-2N MANE 0.92 99.26 247.53 1.36 3.00 98.01 249.00 1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3711E+01 EXCESS=0.0000E+00 OUTFLOW=0.3711E+01 BASIN STORAGE=0.3220E-11 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R1B-2N MANE 0.83 98.83 247.91 1.35 3.00 97.26 249.00 1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3673E+01 EXCESS=0.0000E+00 OUTFLOW=0.3684E+01 BASIN STORAGE=0.3207E-11 PERCENT ERROR= -0.3

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R1B-2N MANE 1.03 53.55 247.69 1.14 3.00 53.37 249.00 1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3088E+01 EXCESS=0.0000E+00 OUTFLOW=0.3089E+01 BASIN STORAGE=0.3137E-11 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R1B-2N MANE 1.09 38.34 248.42 0.92 3.00 38.21 249.00 0.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2500E+01 EXCESS=0.0000E+00 OUTFLOW=0.2500E+01 BASIN STORAGE=0.3264E-11 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R1B-2N MANE 1.19 22.19 248.72 0.62 3.00 22.17 249.00 0.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1684E+01 EXCESS=0.0000E+00 OUTFLOW=0.1686E+01 BASIN STORAGE=0.3255E-11 PERCENT ERROR= -0.1

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R1B-2N MANE 0.90 51.28 247.95 1.67 3.00 51.12 249.00 1.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4529E+01 EXCESS=0.0000E+00 OUTFLOW=0.4530E+01 BASIN STORAGE=0.3257E-11 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R1B-2N MANE 1.05 48.69 248.70 1.57 3.00 48.64 249.00 1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4264E+01 EXCESS=0.0000E+00 OUTFLOW=0.4266E+01 BASIN STORAGE=0.3118E-11 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2N-2 MANE 0.31 154.68 249.16 1.36 3.00 154.46 249.00 1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6138E+01 EXCESS=0.0000E+00 OUTFLOW=0.6147E+01 BASIN STORAGE=0.5105E-06 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R2N-2 MANE 0.31 153.62 249.29 1.34 3.00 153.29 249.00 1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6080E+01 EXCESS=0.0000E+00 OUTFLOW=0.6088E+01 BASIN STORAGE=0.5465E-06 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R2N-2 MANE 0.42 85.54 249.46 1.13 3.00 85.38 249.00 1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5110E+01 EXCESS=0.0000E+00 OUTFLOW=0.5111E+01 BASIN STORAGE=0.4442E-06 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R2N-2 MANE 0.42 61.35 249.48 0.91 3.00 61.19 249.00 0.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4137E+01 EXCESS=0.0000E+00 OUTFLOW=0.4138E+01 BASIN STORAGE=0.5190E-06 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R2N-2 MANE 0.47 35.73 249.69 0.62 3.00 35.56 249.00 0.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2788E+01 EXCESS=0.0000E+00 OUTFLOW=0.2789E+01 BASIN STORAGE=0.5140E-06 PERCENT ERROR= -0.1

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R2N-2 MANE 0.30 82.46 249.44 1.65 3.00 82.26 249.00 1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7500E+01 EXCESS=0.0000E+00 OUTFLOW=0.7502E+01 BASIN STORAGE=0.4816E-06 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R2N-2 MANE 0.39 78.41 249.52 1.56 3.00 78.24 249.00 1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7064E+01 EXCESS=0.0000E+00 OUTFLOW=0.7065E+01 BASIN STORAGE=0.4315E-06 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2-3 MANE 1.87 394.92 253.51 2.92 3.00 390.70 255.00 2.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2831E+02 EXCESS=0.0000E+00 OUTFLOW=0.2825E+02 BASIN STORAGE=0.4180E-01 PERCENT ERROR= 0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R2-3 MANE 1.87 391.85 253.62 2.90 3.00 387.99 255.00 2.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2813E+02 EXCESS=0.0000E+00 OUTFLOW=0.2806E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR= 0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R2-3 MANE 2.18 249.49 258.70 2.55 3.00 249.46 258.00 2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2474E+02 EXCESS=0.0000E+00 OUTFLOW=0.2468E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR= 0.1

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R2-3 MANE 2.42 191.22 260.01 2.23 3.00 190.55 261.00 2.23

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2169E+02 EXCESS=0.0000E+00 OUTFLOW=0.2163E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR= 0.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R2-3 MANE 2.74 131.58 263.67 1.83 3.00 131.54 261.00 1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1774E+02 EXCESS=0.0000E+00 OUTFLOW=0.1770E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R2-3 MANE 2.27 254.73 261.04 3.27 3.00 254.71 261.00 3.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3175E+02 EXCESS=0.0000E+00 OUTFLOW=0.3170E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R2-3 MANE 2.30 243.97 260.84 3.14 3.00 243.92 261.00 3.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3044E+02 EXCESS=0.0000E+00 OUTFLOW=0.3040E+02 BASIN STORAGE=0.4192E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R3-5 MANE 3.00 458.43 261.68 2.73 3.00 458.12 261.00 2.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3337E+02 EXCESS=0.0000E+00 OUTFLOW=0.3338E+02 BASIN STORAGE=0.7696E-01 PERCENT ERROR= -0.2

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R3-5 MANE 3.00 455.77 258.51 2.71 3.00 454.00 261.00 2.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3315E+02 EXCESS=0.0000E+00 OUTFLOW=0.3316E+02 BASIN STORAGE=0.7696E-01 PERCENT ERROR= -0.3

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R3-5 MANE 3.00 294.25 265.05 2.39 3.00 293.16 267.00 2.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2933E+02 EXCESS=0.0000E+00 OUTFLOW=0.2923E+02 BASIN STORAGE=0.8862E-01 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R3-5 MANE 3.00 223.97 267.76 2.10 3.00 223.17 267.00 2.10

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2574E+02 EXCESS=0.0000E+00 OUTFLOW=0.2567E+02 BASIN STORAGE=0.9261E-01 PERCENT ERROR= -0.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R3-5 MANE 3.00 152.87 273.07 1.71 3.00 152.80 273.00 1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2102E+02 EXCESS=0.0000E+00 OUTFLOW=0.2089E+02 BASIN STORAGE=0.9561E-01 PERCENT ERROR= 0.2

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R3-5 MANE 2.96 299.06 267.64 3.09 3.00 298.54 270.00 3.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3795E+02 EXCESS=0.0000E+00 OUTFLOW=0.3782E+02 BASIN STORAGE=0.9250E-01 PERCENT ERROR= 0.1

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R3-5 MANE 2.96 286.26 268.14 2.96 3.00 285.63 270.00 2.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3638E+02 EXCESS=0.0000E+00 OUTFLOW=0.3628E+02 BASIN STORAGE=0.8862E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R7W-8W MANE 2.73 102.63 267.82 1.79 3.00 102.19 267.00 1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3402E+01 EXCESS=0.0000E+00 OUTFLOW=0.4461E+01 BASIN STORAGE=0.3428E-03 PERCENT ERROR= -31.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R7W-8W MANE 2.59 104.73 266.79 1.55 3.00 104.06 267.00 1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3367E+01 EXCESS=0.0000E+00 OUTFLOW=0.3871E+01 BASIN STORAGE=0.3311E-03 PERCENT ERROR= -15.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R7W-8W MANE 2.99 52.62 270.98 1.33 3.00 52.50 273.00 1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2832E+01 EXCESS=0.0000E+00 OUTFLOW=0.3326E+01 BASIN STORAGE=0.3101E-03 PERCENT ERROR= -17.5

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R7W-8W MANE 3.00 37.32 275.61 1.13 3.00 37.24 276.00 1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2292E+01 EXCESS=0.0000E+00 OUTFLOW=0.2822E+01 BASIN STORAGE=0.3108E-03 PERCENT ERROR= -23.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R7W-8W MANE 3.00 21.45 284.63 0.78 3.00 21.39 282.00 0.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1544E+01 EXCESS=0.0000E+00 OUTFLOW=0.1942E+01 BASIN STORAGE=0.3316E-03 PERCENT ERROR= -25.8

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R7W-8W MANE 3.00 49.46 273.94 1.67 3.00 49.38 273.00 1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4156E+01 EXCESS=0.0000E+00 OUTFLOW=0.4179E+01 BASIN STORAGE=0.3376E-03 PERCENT ERROR= -0.6

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R7W-8W MANE 3.00 47.01 271.91 1.58 3.00 46.97 273.00 1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3912E+01 EXCESS=0.0000E+00 OUTFLOW=0.3956E+01 BASIN STORAGE=0.3474E-03 PERCENT ERROR= -1.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8NW8N MANE 0.75 40.02 244.34 1.98 3.00 39.44 243.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1550E+01 EXCESS=0.0000E+00 OUTFLOW=0.1552E+01 BASIN STORAGE=0.1215E-06 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8NW8N MANE 0.77 39.68 244.02 1.96 3.00 39.17 243.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1538E+01 EXCESS=0.0000E+00 OUTFLOW=0.1540E+01 BASIN STORAGE=0.1352E-06 PERCENT ERROR= -0.2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8NW8N MANE 0.97 21.41 244.47 1.86 3.00 21.33 243.00 1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1449E+01 EXCESS=0.0000E+00 OUTFLOW=0.1455E+01 BASIN STORAGE=0.1154E-06 PERCENT ERROR= -0.4

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R8NW8N MANE 1.05 16.17 244.69 1.68 3.00 16.11 243.00 1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1313E+01 EXCESS=0.0000E+00 OUTFLOW=0.1317E+01 BASIN STORAGE=0.1153E-06 PERCENT ERROR= -0.2

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R8NW8N MANE 1.03 10.82 245.03 1.37 3.00 10.72 243.00 1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1074E+01 EXCESS=0.0000E+00 OUTFLOW=0.1077E+01 BASIN STORAGE=0.1398E-06 PERCENT ERROR= -0.3

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R8NW8N MANE 0.91 19.33 244.37 2.65 3.00 19.25 243.00 2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2076E+01 EXCESS=0.0000E+00 OUTFLOW=0.2081E+01 BASIN STORAGE=0.1314E-06 PERCENT ERROR= -0.2

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R8NW8N MANE 0.88 18.61 244.50 2.54 3.00 18.51 243.00 2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1987E+01 EXCESS=0.0000E+00 OUTFLOW=0.1989E+01 BASIN STORAGE=0.1316E-06 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8NE8N MANE 0.69 42.06 244.33 1.98 3.00 41.68 243.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1579E+01 EXCESS=0.0000E+00 OUTFLOW=0.1583E+01 BASIN STORAGE=0.1124E-06 PERCENT ERROR= -0.2

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8NE8N MANE 0.68 41.82 244.25 1.96 3.00 41.41 243.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1567E+01 EXCESS=0.0000E+00 OUTFLOW=0.1569E+01 BASIN STORAGE=0.1055E-06 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8NE8N MANE 0.92 22.13 243.92 1.85 3.00 22.08 243.00 1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1476E+01 EXCESS=0.0000E+00 OUTFLOW=0.1484E+01 BASIN STORAGE=0.1034E-06 PERCENT ERROR= -0.5

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R8NE8N MANE 0.97 16.69 243.96 1.68 3.00 16.65 243.00 1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1338E+01 EXCESS=0.0000E+00 OUTFLOW=0.1340E+01 BASIN STORAGE=0.1343E-06 PERCENT ERROR= -0.2

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R8NE8N MANE 1.12 11.10 244.46 1.37 3.00 11.06 243.00 1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1094E+01 EXCESS=0.0000E+00 OUTFLOW=0.1095E+01 BASIN STORAGE=0.1098E-06 PERCENT ERROR= -0.1

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R8NE8N MANE 0.90 19.88 244.18 2.65 3.00 19.84 243.00 2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2116E+01 EXCESS=0.0000E+00 OUTFLOW=0.2117E+01 BASIN STORAGE=0.9623E-07 PERCENT ERROR= -0.1

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R8NE8N MANE 0.86 19.14 244.71 2.54 3.00 19.09 243.00 2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2025E+01 EXCESS=0.0000E+00 OUTFLOW=0.2028E+01 BASIN STORAGE=0.1302E-06 PERCENT ERROR= -0.2

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8N-8W MANE 0.52 152.44 243.65 1.98 3.00 150.95 243.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5871E+01 EXCESS=0.0000E+00 OUTFLOW=0.5874E+01 BASIN STORAGE=0.1353E-07 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8N-8W MANE 0.51 151.61 243.84 1.96 3.00 149.94 243.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5822E+01 EXCESS=0.0000E+00 OUTFLOW=0.5823E+01 BASIN STORAGE=0.1343E-07 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8N-8W MANE 0.53 81.55 243.95 1.85 3.00 81.15 243.00 1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5500E+01 EXCESS=0.0000E+00 OUTFLOW=0.5501E+01 BASIN STORAGE=0.1336E-07 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R8N-8W MANE 0.65 61.43 243.75 1.68 3.00 61.23 243.00 1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4978E+01 EXCESS=0.0000E+00 OUTFLOW=0.4978E+01 BASIN STORAGE=0.1320E-07 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R8N-8W MANE 0.74 40.89 244.25 1.37 3.00 40.71 243.00 1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4070E+01 EXCESS=0.0000E+00 OUTFLOW=0.4071E+01 BASIN STORAGE=0.1350E-07 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R8N-8W MANE 0.57 73.39 244.05 2.65 3.00 73.13 243.00 2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7867E+01 EXCESS=0.0000E+00 OUTFLOW=0.7867E+01 BASIN STORAGE=0.1321E-07 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R8N-8W MANE 0.64 70.52 244.05 2.53 3.00 70.34 243.00 2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7526E+01 EXCESS=0.0000E+00 OUTFLOW=0.7527E+01 BASIN STORAGE=0.1341E-07 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8W-4 MANE 0.61 288.74 246.26 1.91 3.00 288.70 246.00 1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1646E+02 EXCESS=0.0000E+00 OUTFLOW=0.1645E+02 BASIN STORAGE=0.1371E-03 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8W-4 MANE 0.53 286.94 246.33 1.83 3.00 286.84 246.00 1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1577E+02 EXCESS=0.0000E+00 OUTFLOW=0.1578E+02 BASIN STORAGE=0.1364E-03 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80

R8W-4 MANE 0.74 161.70 245.00 1.69 3.00 161.56 246.00 1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1454E+02 EXCESS=0.0000E+00 OUTFLOW=0.1454E+02 BASIN STORAGE=0.1408E-03 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R8W-4 MANE 0.78 122.55 244.62 1.51 3.00 122.49 246.00 1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1298E+02 EXCESS=0.0000E+00 OUTFLOW=0.1297E+02 BASIN STORAGE=0.1356E-03 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R8W-4 MANE 0.97 82.08 246.65 1.19 3.00 82.01 246.00 1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1023E+02 EXCESS=0.0000E+00 OUTFLOW=0.1023E+02 BASIN STORAGE=0.1378E-03 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R8W-4 MANE 0.72 147.07 246.77 2.36 3.00 147.06 246.00 2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2027E+02 EXCESS=0.0000E+00 OUTFLOW=0.2028E+02 BASIN STORAGE=0.1355E-03 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R8W-4 MANE 0.85 141.44 246.46 2.25 3.00 141.43 246.00 2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1935E+02 EXCESS=0.0000E+00 OUTFLOW=0.1936E+02 BASIN STORAGE=0.1431E-03 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R4-5 MANE 2.25 581.22 250.37 2.01 3.00 571.59 249.00 2.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3268E+02 EXCESS=0.0000E+00 OUTFLOW=0.3273E+02 BASIN STORAGE=0.4091E-03 PERCENT ERROR= -0.2

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R4-5 MANE 2.30 574.86 250.76 1.96 3.00 566.30 249.00 1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3188E+02 EXCESS=0.0000E+00 OUTFLOW=0.3195E+02 BASIN STORAGE=0.4397E-03 PERCENT ERROR= -0.2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R4-5 MANE 2.78 331.68 249.80 1.81 3.00 330.74 252.00 1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2948E+02 EXCESS=0.0000E+00 OUTFLOW=0.2950E+02 BASIN STORAGE=0.3881E-03 PERCENT ERROR= -0.1

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R4-5 MANE 3.00 250.94 251.05 1.62 3.00 249.92 252.00 1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2640E+02 EXCESS=0.0000E+00 OUTFLOW=0.2643E+02 BASIN STORAGE=0.3813E-03 PERCENT ERROR= -0.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R4-5 MANE 3.00 164.62 254.83 1.31 3.00 164.54 252.00 1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2125E+02 EXCESS=0.0000E+00 OUTFLOW=0.2129E+02 BASIN STORAGE=0.3682E-03 PERCENT ERROR= -0.2

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R4-5 MANE 2.85 309.77 251.59 2.49 3.00 309.09 252.00 2.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4041E+02 EXCESS=0.0000E+00 OUTFLOW=0.4051E+02 BASIN STORAGE=0.3879E-03 PERCENT ERROR= -0.2

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R4-5 MANE 2.86 295.96 250.39 2.38 3.00 295.45 252.00 2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3868E+02 EXCESS=0.0000E+00 OUTFLOW=0.3875E+02 BASIN STORAGE=0.3882E-03 PERCENT ERROR= -0.2

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R5-6 MANE 2.20 1010.21 262.68 2.23 3.00 1000.34 261.00 2.23

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7880E+02 EXCESS=0.0000E+00 OUTFLOW=0.7874E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R5-6 MANE 2.21 994.60 262.88 2.20 3.00 987.77 261.00 2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7768E+02 EXCESS=0.0000E+00 OUTFLOW=0.7757E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R5-6 MANE 2.48 665.14 266.57 1.99 3.00 662.19 267.00 1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7008E+02 EXCESS=0.0000E+00 OUTFLOW=0.7004E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R5-6 MANE 2.81 502.74 267.30 1.76 3.00 499.70 267.00 1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6201E+02 EXCESS=0.0000E+00 OUTFLOW=0.6198E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= -0.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R5-6 MANE 3.36 325.91 273.89 1.42 3.00 322.56 276.00 1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5001E+02 EXCESS=0.0000E+00 OUTFLOW=0.4998E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= -0.1

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R5-6 MANE 2.61 680.31 263.26 2.65 3.00 679.88 264.00 2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9360E+02 EXCESS=0.0000E+00 OUTFLOW=0.9357E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R5-6 MANE 2.52 649.46 264.71 2.54 3.00 649.25 264.00 2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8961E+02 EXCESS=0.0000E+00 OUTFLOW=0.8960E+02 BASIN STORAGE=0.7457E-01 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R7E-8E MANE 1.76 19.03 266.67 0.91 3.00 19.02 267.00 0.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1268E+01 EXCESS=0.0000E+00 OUTFLOW=0.1268E+01 BASIN STORAGE=0.1101E-04 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R7E-8E MANE 1.77 18.85 266.81 0.90 3.00 18.84 267.00 0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1254E+01 EXCESS=0.0000E+00 OUTFLOW=0.1254E+01 BASIN STORAGE=0.1092E-04 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R7E-8E MANE 2.41 8.57 268.50 0.49 3.00 8.54 270.00 0.49

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6750E+00 EXCESS=0.0000E+00 OUTFLOW=0.6756E+00 BASIN STORAGE=0.1319E-04 PERCENT ERROR= -0.1

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R7E-8E MANE 3.00 3.99 269.13 0.21 3.00 3.99 270.00 0.21

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2917E+00 EXCESS=0.0000E+00 OUTFLOW=0.2928E+00 BASIN STORAGE=0.1256E-04 PERCENT ERROR= -0.4

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R7E-8E MANE 3.00 0.26 292.33 0.01 3.00 0.25 294.00 0.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1646E-01 EXCESS=0.0000E+00 OUTFLOW=0.2054E-01 BASIN STORAGE=0.1096E-04 PERCENT ERROR= -24.8

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R7E-8E MANE 2.36 9.61 272.07 0.60 3.00 9.60 273.00 0.60

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8313E+00 EXCESS=0.0000E+00 OUTFLOW=0.8321E+00 BASIN STORAGE=0.1454E-04 PERCENT ERROR= -0.1

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R7E-8E MANE 2.43 8.70 271.22 0.54 3.00 8.69 273.00 0.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7492E+00 EXCESS=0.0000E+00 OUTFLOW=0.7500E+00 BASIN STORAGE=0.1049E-04 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R9N-R9 MANE 2.26 13.31 278.00 1.08 3.00 13.26 279.00 1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1613E+01 EXCESS=0.0000E+00 OUTFLOW=0.1611E+01 BASIN STORAGE=0.2018E-04 PERCENT ERROR= 0.1

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R9N-R9 MANE 2.27 13.16 278.20 1.07 3.00 13.12 279.00 1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1595E+01 EXCESS=0.0000E+00 OUTFLOW=0.1593E+01 BASIN STORAGE=0.1743E-04 PERCENT ERROR= 0.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R9N-R9 MANE 2.76 8.13 284.79 0.74 3.00 8.13 285.00 0.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1103E+01 EXCESS=0.0000E+00 OUTFLOW=0.1102E+01 BASIN STORAGE=0.2044E-04 PERCENT ERROR= 0.1

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R9N-R9 MANE 3.00 5.05 284.63 0.46 3.00 5.05 285.00 0.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6843E+00 EXCESS=0.0000E+00 OUTFLOW=0.6838E+00 BASIN STORAGE=0.2050E-04 PERCENT ERROR= 0.1

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R9N-R9 MANE 3.00 1.59 293.56 0.14 3.00 1.59 294.00 0.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2079E+00 EXCESS=0.0000E+00 OUTFLOW=0.2079E+00 BASIN STORAGE=0.1894E-04 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R9N-R9 MANE 2.65 9.46 288.90 0.92 3.00 9.46 288.00 0.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1380E+01 EXCESS=0.0000E+00 OUTFLOW=0.1379E+01 BASIN STORAGE=0.1805E-04 PERCENT ERROR= 0.1

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R9N-R9 MANE 2.68 8.74 288.39 0.84 3.00 8.73 288.00 0.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1261E+01 EXCESS=0.0000E+00 OUTFLOW=0.1260E+01 BASIN STORAGE=0.1932E-04 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8E-R9 MANE 0.32 77.02 273.53 0.96 3.00 76.82 273.00 0.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6728E+01 EXCESS=0.0000E+00 OUTFLOW=0.6728E+01 BASIN STORAGE=0.7838E-05 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R8E-R9 MANE 0.32 76.18 273.66 0.95 3.00 75.99 273.00 0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6652E+01 EXCESS=0.0000E+00 OUTFLOW=0.6653E+01 BASIN STORAGE=0.7629E-05 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R8E-R9 MANE 0.45 38.17 276.54 0.55 3.00 38.13 276.00 0.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3882E+01 EXCESS=0.0000E+00 OUTFLOW=0.3882E+01 BASIN STORAGE=0.7462E-05 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R8E-R9 MANE 0.52 19.07 276.61 0.27 3.00 19.04 276.00 0.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1925E+01 EXCESS=0.0000E+00 OUTFLOW=0.1925E+01 BASIN STORAGE=0.7540E-05 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R8E-R9 MANE 0.94 2.52 293.35 0.04 3.00 2.51 294.00 0.04

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3008E+00 EXCESS=0.0000E+00 OUTFLOW=0.3008E+00 BASIN STORAGE=0.6726E-05 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R8E-R9 MANE 0.36 44.12 279.67 0.68 3.00 44.08 279.00 0.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4782E+01 EXCESS=0.0000E+00 OUTFLOW=0.4782E+01 BASIN STORAGE=0.7472E-05 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R8E-R9 MANE 0.43 40.11 279.56 0.62 3.00 40.07 279.00 0.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4334E+01 EXCESS=0.0000E+00 OUTFLOW=0.4334E+01 BASIN STORAGE=0.7666E-05 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
BSNRT1 MANE 0.39 244.41 552.63 0.80 3.00 244.41 552.00 0.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3084E+03 EXCESS=0.0000E+00 OUTFLOW=0.3084E+03 BASIN STORAGE=0.3153E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
BSNRT1 MANE 0.39 244.36 552.54 0.80 3.00 244.36 552.00 0.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3083E+03 EXCESS=0.0000E+00 OUTFLOW=0.3082E+03 BASIN STORAGE=0.3153E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
BSNRT1 MANE 0.41 241.71 552.95 0.79 3.00 241.71 552.00 0.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3040E+03 EXCESS=0.0000E+00 OUTFLOW=0.3039E+03 BASIN STORAGE=0.3152E-01 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
BSNRT1 MANE 0.33 239.65 552.95 0.78 3.00 239.64 555.00 0.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3008E+03 EXCESS=0.0000E+00 OUTFLOW=0.3007E+03 BASIN STORAGE=0.3152E-01 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
BSNRT1 MANE 0.44 237.69 555.51 0.77 3.00 237.69 555.00 0.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2977E+03 EXCESS=0.0000E+00 OUTFLOW=0.2976E+03 BASIN STORAGE=0.3151E-01 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
BSNRT1 MANE 0.46 242.84 552.79 0.79 3.00 242.84 552.00 0.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3057E+03 EXCESS=0.0000E+00 OUTFLOW=0.3057E+03 BASIN STORAGE=0.3153E-01 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
BSNRT1 MANE 0.37 242.32 552.68 0.79 3.00 242.32 552.00 0.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3049E+03 EXCESS=0.0000E+00 OUTFLOW=0.3049E+03 BASIN STORAGE=0.3153E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
BSNRT2 MANE 0.50 244.41 552.74 0.80 3.00 244.41 552.00 0.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3084E+03 EXCESS=0.0000E+00 OUTFLOW=0.3083E+03 BASIN STORAGE=0.3601E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
BSNRT2 MANE 0.43 244.36 552.89 0.80 3.00 244.36 552.00 0.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3082E+03 EXCESS=0.0000E+00 OUTFLOW=0.3082E+03 BASIN STORAGE=0.3601E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
BSNRT2 MANE 0.49 241.71 553.29 0.79 3.00 241.71 555.00 0.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3040E+03 EXCESS=0.0000E+00 OUTFLOW=0.3039E+03 BASIN STORAGE=0.3600E-01 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
BSNRT2 MANE 0.36 239.64 555.76 0.78 3.00 239.64 555.00 0.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3007E+03 EXCESS=0.0000E+00 OUTFLOW=0.3007E+03 BASIN STORAGE=0.3599E-01 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
BSNRT2 MANE 0.37 237.69 555.79 0.77 3.00 237.69 555.00 0.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2976E+03 EXCESS=0.0000E+00 OUTFLOW=0.2976E+03 BASIN STORAGE=0.3598E-01 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
BSNRT2 MANE 0.50 242.84 553.18 0.79 3.00 242.83 552.00 0.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3057E+03 EXCESS=0.0000E+00 OUTFLOW=0.3057E+03 BASIN STORAGE=0.3600E-01 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
BSNRT2 MANE 0.36 242.32 552.92 0.79 3.00 242.31 555.00 0.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3049E+03 EXCESS=0.0000E+00 OUTFLOW=0.3048E+03 BASIN STORAGE=0.3600E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R10-11 MANE 3.04 244.41 557.55 25.54 3.00 244.41 558.00 25.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3125E+03 EXCESS=0.0000E+00 OUTFLOW=0.3119E+03 BASIN STORAGE=0.6746E+00 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 0.50
R10-11 MANE 3.07 244.36 558.85 25.53 3.00 244.35 558.00 25.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3124E+03 EXCESS=0.0000E+00 OUTFLOW=0.3117E+03 BASIN STORAGE=0.6746E+00 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80
R10-11 MANE 3.00 241.71 559.89 25.15 3.00 241.70 561.00 25.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3077E+03 EXCESS=0.0000E+00 OUTFLOW=0.3071E+03 BASIN STORAGE=0.6744E+00 PERCENT ERROR= 0.0

FOR STORM = 4 STORM AREA (SQ MI) = 16.00
R10-11 MANE 3.00 239.64 561.16 24.84 3.00 239.64 561.00 24.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3040E+03 EXCESS=0.0000E+00 OUTFLOW=0.3034E+03 BASIN STORAGE=0.6743E+00 PERCENT ERROR= 0.0

FOR STORM = 5 STORM AREA (SQ MI) = 90.00
R10-11 MANE 3.07 237.68 560.85 24.53 3.00 237.68 561.00 24.53

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3003E+03 EXCESS=0.0000E+00 OUTFLOW=0.2996E+03 BASIN STORAGE=0.6743E+00 PERCENT ERROR= 0.0

FOR STORM = 6 STORM AREA (SQ MI) = 10.00
R10-11 MANE 3.07 242.83 560.81 25.40 3.00 242.83 558.00 25.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3108E+03 EXCESS=0.0000E+00 OUTFLOW=0.3102E+03 BASIN STORAGE=0.6744E+00 PERCENT ERROR= 0.0

FOR STORM = 7 STORM AREA (SQ MI) = 20.00
R10-11 MANE 3.00 242.31 558.78 25.30 3.00 242.31 561.00 25.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3097E+03 EXCESS=0.0000E+00 OUTFLOW=0.3090E+03 BASIN STORAGE=0.6745E+00 PERCENT ERROR= 0.0

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

100yr-24hr-Ultimate


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1*****
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*
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
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* JUN 1998 *
*
* VERSION 4.1 *
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* RUN DATE 26APR21 TIME 09:31:12 *
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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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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 -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID CROSS ROADS EAST DRAINAGE INFRASTRUCTURE
2 ID POWERLINE CORRIDOR
3 ID RESERVE ROUTING OF BASIN 53R N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ
4 ID INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:
5 ID 100-YR, 24-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND
6 ID PIMA ROAD FLOWS.
7 ID
8 ID PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14
9 ID MODELERS: RK, MW
10 ID
11 ID REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 08/07/18
12 ID MODELERS: MSW, ES
13 ID REVISIONS NOTED WITH HE
14 ID NEW PROP CONDITION MODEL,WITH POWERLINE AND BASIN 53R
15 ID THIS IS THE ULTIMATE CONDITION MODEL
16 ID
17 ID REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 10/25/19
18 ID MODELERS: MSW
19 ID XKSAT ADJUSTMENT
20 ID
21 ID REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 07/15/20
22 ID MODELERS: MSW, TSW
23 ID REVISIONS NOTED WITH HE (Hubbard Engineering)
24 ID NEW PROPOSED CONDITION MODEL, ACCOUNT FOR WHAT HAS BEEN
25 ID CONSTRUCTED IN PHASE 1 INFRASTRUCTURE, DETAIL OUT NEW CP
26 ID ACCOUNT FOR HIGHER C FACTOR AND IMPERVIOUSNESS, ADD RETENTION
27 ID FIRST FLUSH RETENTION ADDED AS DIVERT CARD WITH VOLUME REQUIRED
28 ID
29 IT 3 0 0 1000
30 IN 15
31 IO 5
*DIAGRAM
*

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32	JD	3.849	0.0001								
33	PC	0.000	0.002	0.005	0.008	0.011	0.014	0.017	0.020	0.023	0.026
34	PC	0.029	0.032	0.035	0.038	0.041	0.044	0.048	0.052	0.056	0.060
35	PC	0.064	0.068	0.072	0.076	0.080	0.085	0.090	0.095	0.100	0.105
36	PC	0.110	0.115	0.120	0.126	0.133	0.140	0.147	0.155	0.163	0.172
37	PC	0.181	0.191	0.203	0.218	0.236	0.257	0.283	0.387	0.663	0.707
38	PC	0.735	0.758	0.776	0.791	0.804	0.815	0.825	0.834	0.842	0.849
39	PC	0.856	0.863	0.869	0.875	0.881	0.887	0.893	0.898	0.903	0.908
40	PC	0.913	0.918	0.922	0.926	0.930	0.934	0.938	0.942	0.946	0.950
41	PC	0.953	0.956	0.959	0.962	0.965	0.968	0.971	0.974	0.977	0.980
42	PC	0.983	0.986	0.989	0.992	0.995	0.998	1.000			
43	JD	3.657	10.0								
44	JD	3.533	20.0								

*

45	KK	76THST									
46	KM	76TH ST CHANNEL HYDROGRAPH FROM PINNACLE PEAK SOUTH ADMS									
47	KM	100-YR, 24-HR FLO-2D MODEL (XS 98)									
48	BA	0.24									
49	QI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	QI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	QI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01

HEC-1 INPUT

1

LINE	ID	.....1	.....2	.....3	.....4	.....5	.....6	.....7	.....8	.....9	.....10
52	QI	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.03	0.05
53	QI	0.09	0.11	0.14	0.21	0.34	0.51	0.76	3.70	17.69	47.79
54	QI	68.57	54.61	42.75	35.61	32.34	29.25	26.13	22.83	19.41	18.11
55	QI	16.15	14.54	13.75	12.53	12.00	11.44	10.52	9.81	9.34	9.09
56	QI	9.11	8.71	8.37	8.05	7.67	7.75	7.47	7.08	6.97	6.77
57	QI	6.59	6.44	6.32	6.12	5.95	5.87	5.70	5.84	5.41	5.44
58	QI	4.56	4.81	4.75	4.78	4.69	4.67	4.61	4.36	4.20	4.00
59	QI	3.75	3.51	2.49	3.43	3.61	3.65	2.48	2.36	2.19	2.07
60	QI	1.94	1.72	1.71	1.36	1.48	1.13	1.13	1.20	1.10	1.06
61	QI	1.06	1.00	0.94	0.89	0.85	0.81	0.78	0.74	0.72	0.70
62	QI	0.67	0.64	0.62	0.59	0.57	0.55	0.53	0.51	0.49	0.47
63	QI	0.45	0.44	0.42	0.40	0.39					

*

64	KK	SB01A	BASIN								
65	BA	0.061									
66	PB	2.721									
67	PC	0.000	0.008	0.016	0.025	0.033	0.041	0.050	0.058	0.066	0.075
68	PC	0.087	0.099	0.119	0.150	0.234	0.413	0.766	0.875	0.916	0.944
69	PC	0.956	0.968	0.979	0.990	1.000					
70	LG	0.25	0.25	4.03	0.56	45					
71	UC	0.439	0.231								
72	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
73	UA	100									

*

74	KK	SB01A	DIVERT								
75	KM	DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01A									
76	KM	FIRST FLUSH VOL = 1.383 AC-FT									
77	DT	RET01A	1.383								
78	DI	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0
79	DQ	0.0	10.0	20.0	30.0	40.0	50.0	60.0	100.0	150.0	200.0

*

80	KK	CP-1	COMBINE								
81	KM	LEGACY BLVD AND 76TH ST (MILLER RD CHANNEL)									
82	HC	2	0.301								

*

83	KK	R1A-2W	ROUTE								
84	KM	ROUTE CP-1 TO CP-2W									
85	RK	1114	0.0200	0.018		TRAP	2.000	0.00			

*

86	KK	SB02NW	BASIN								
87	KM	BASIN SB02E WAS SPLIT INTO SUB BASINS NORTH OF CAVASSON									
88	KM	AND SOUTH OF CAVASSON									
89	BA	0.0193									
90	LG	0.25	0.25	4.03	0.56	45					
91	UC	0.276	0.224								
92	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
93	UA	100									

*

HEC-1 INPUT

1

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

94 KK SB02NW DIVERT
 95 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02NW
 96 KM FIRST FLUSH VOL = 0.437 AC-FT
 97 DT RET2NW 0.437
 98 DI 0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0
 99 DI 50.0 55.0 60.0 65.0 70.0 80.0 90.0 100.0 150.0 200.0
 100 DQ 0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0
 101 DQ 50.0 55.0 60.0 65.0 70.0 80.0 90.0 100.0 150.0 200.0
 *

102 KK CP-02W COMBINE
 103 KM COMBINE ROUTE FROM 1A-2W WITH NEW SUB BASIN SB02NW
 104 HC 2 0.305
 *

105 KK R2W-2 ROUTE
 106 RK 1380 0.0140 0.018 TRAP 2.000 0.00
 *

107 KK SB01C BASIN
 108 BA 0.027
 109 LG 0.25 0.25 4.03 0.56 45
 110 UC 0.345 0.366
 111 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
 112 UA 100
 *

113 KK SB01C DIVERT
 114 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01C
 115 KM FIRST FLUSH VOL = 0.612 AC-FT
 116 DT RET01C 0.612
 117 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 118 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 *

119 KK R1C-1B ROUTE
 120 RK 542 0.005 0.013 CIRC 5.000
 *

121 KK SB01B BASIN
 122 BA 0.024
 123 LG 0.25 0.25 4.03 0.56 45
 124 UC 0.304 0.298
 125 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
 126 UA 100
 *

127 KK SB01B DIVERT
 128 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB01B
 129 KM FIRST FLUSH VOL = 0.543 AC-FT
 130 DT RET01B 0.543
 131 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 132 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 *

1

HEC-1 INPUT

PAGE 4

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

133 KK CP-01B COMBINE
 134 KM COMBINE ROUTE 1C-1B WITH SB01B
 135 HC 2 0.051
 *

136 KK R1B-2N ROUTE
 137 RK 1268 0.015 0.025 TRAP 80.00 0.00
 *

138 KK SB02NE BASIN
 139 BA 0.0335
 140 LG 0.25 0.25 4.03 0.56 45
 141 UC 0.406 0.448
 142 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
 143 UA 100
 *

144 KK SB02NE DIVERT
 145 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02NE
 146 KM FIRST FLUSH VOL = 0.760 AC-FT
 147 DT RET2NE 0.760
 148 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 149 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 *

150 KK CP-02N COMBINE
 151 KM COMBINE ROUTE 1B-2N (BASINS SB01-B AND SB01-C) WITH SB02NE
 152 HC 2 0.085
 *

153 KK R2N-2 ROUTE
 154 RK 1380 0.014 0.018 TRAP 2.000 0.00
 *

155 KK SB02E BASIN
 156 BA 0.040
 157 LG 0.10 0.25 4.03 0.61 80
 158 UC 0.369 0.321
 159 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
 160 UA 100
 *

161 KK SB02E DIVERT
 162 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB02E
 163 KM FIRST FLUSH VOL = 0.998 AC-FT
 164 DT RET2E 0.998
 165 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 166 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
 *

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HEC-1 INPUT

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

167 KK SB02W BASIN
 168 BA 0.0571
 169 LG 0.35 0.35 4.33 0.51 0
 170 UC 0.686 0.535
 171 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
 172 UA 100
 *

173 KK CP-02 COMBINE
 174 HC 4 0.1816
 *

175 KK R2-3 ROUTE
 176 KM MILLER RD CHANNEL FROM SR 101L FREEWAY TO MAYO BLVD
 177 RK 1260 0.0015 0.030 TRAP 92 4
 *

178 KK SB03 BASIN
 179 BA 0.048
 180 LG 0.15 0.25 4.50 0.47 55
 181 UC 0.364 0.294
 182 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 183 UA 100
 *

184 KK CP-03 COMBINE
 185 HC 2
 *

186 KK R3-5 ROUTE
 187 KM MILLER RD CHANNEL FROM MAYO BLVD TO PRINCESS BLVD
 188 RK 2396 0.0015 0.03 TRAP 98 4
 *

189 KK SB05 BASIN
 190 BA 0.126
 191 LG 0.22 0.25 4.50 0.44 48
 192 UC 0.327 0.226
 193 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 194 UA 100
 *

195 KK CP-5A COMBINE

248 KM SITE JUST NORTH OF CAVASSON BLVD EAST OF CLARET DR - FUTURE MF
249 BA 0.0129
250 LG 0.10 0.25 4.03 0.61 80
251 UC 0.219 0.169
252 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
253 UA 100
*

254 KK SB8SW DIVERT
255 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8SW
256 KM FIRST FLUSH VOL = 0.292 AC-FT
257 DT RET8SW 0.292
258 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
259 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

260 KK SB8SE BASIN
261 KM SITE JUST NORTH OF CAVASSON AND WEST OF HAYDEN - FUTURE HOTEL OR RETAIL
262 BA 0.0131
263 LG 0.10 0.25 4.03 0.61 80
264 UC 0.242 0.210
265 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
266 UA 100
*

267 KK SB8SE DIVERT
268 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB8SE
269 KM FIRST FLUSH VOL = 0.297 AC-FT
270 DT RET8SE 0.297
271 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
272 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

273 KK CP-08N COMBINE
274 KM CP AT INLET ON NORTH SIDE OF CAVASSON - ENTERS EXIST STORM DRAIN
275 HC 4 0.0557
*

276 KK R8N-8W ROUTE
277 KM ROUTE NEW SUB BASINS SB8NE SB8NW SB8SW SB8SE TO CP-08W
278 KM ROUTE IN STORM DRAIN
279 RK 1592 0.015 0.013 CIRC 3
*

HEC-1 INPUT

1

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

280 KK SB08W BASIN
281 BA 0.0589
282 LG 0.10 0.25 4.03 0.61 80
283 UC 0.225 0.150
284 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
285 UA 100
*

286 KK SB08W DIVERT
287 KM DIVERSION OF FIRST FLUSH VOLUME FOR BASIN SB08W
288 KM FIRST FLUSH VOL REQ = 1.335 AC-FT, PROVIDED = 1.415
289 KM THIS IS EXISTING AND WAS BUILT IN PHASE 1
290 DT RET8W 1.415
291 DI 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
292 DQ 0.0 10.0 20.0 30.0 40.0 50.0 60.0 100.0 150.0 200.0
*

293 KK CP-08W COMBINE
294 HC 3 0.1614
*

295 KK R8W-4 ROUTE
296 RK 3137 0.0130 0.030 TRAP 2.000 0.00
*

297 KK SB04 BASIN
298 BA 0.144
299 LG 0.14 0.25 4.60 0.44 61
300 UC 0.305 0.199
301 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
302 UA 100

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*
303    KK    CP-4 COMBINE
304    HC      2
*

305    KK    R4-5  ROUTE
306    KM      PRINCESS BLVD CHANNEL FROM 77TH ST TO 76TH ST
307    RK    1992 0.0013  0.03          TRAP    39      4
*

308    KK    CP-05 COMBINE
309    KM      PRINCESS BLVD AND 76TH ST (PRINCESS BLVD CHANNEL)
310    KM      COMBINE CP-05A AND R4-5
311    HC      2
*

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HEC-1 INPUT

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

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312    KK    R5-6  ROUTE
313    KM      PRINCESS BLVD CHANNEL FROM 76TH ST TO SCOTTSDALE RD
314    RK    1694 0.0015  0.03          TRAP    188      4
*

315    KK    SB06  BASIN
316    BA    0.136
317    LG    0.16   0.25   4.55   0.45   53
318    UC    0.321  0.246
319    UA    0     5.0   16.0   30.0   65.0   77.0   84.0   90.0   94.0   97.0
320    UA    100
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321    KK    CP-06 COMBINE
322    HC      2
*

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323    KK    SB07E BASIN
324    BA    0.026
325    LG    0.10   0.25   4.03   0.74   0
326    UC    0.574  0.527
327    UA    0     3.0   5.0    8.0   12.0   20.0   43.0   75.0   90.0   96.0
328    UA    100
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329    KK    R7E-8E ROUTE
330    RK    3662 0.0130  0.030          TRAP    2.000   0.00
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331    KK    SB08E BASIN
332    BA    0.078
333    LG    0.10   0.25   4.08   0.72   0
334    UC    0.798  0.652
335    UA    0     3.0   5.0    8.0   12.0   20.0   43.0   75.0   90.0   96.0
336    UA    100
*

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337    KK    SB09N BASIN
338    BA    0.028
339    LG    0.10   0.25   4.79   0.49   0
340    UC    0.740  1.111
341    UA    0     3.0   5.0    8.0   12.0   20.0   43.0   75.0   90.0   96.0
342    UA    100
*

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343    KK    R9N-R9 ROUTE
344    RK    2586 0.0013  0.020          TRAP    2.000   0.00
*

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1

HEC-1 INPUT

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

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345    KK    CP-08E COMBINE
346    HC      3
*

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347    KK    R8E-R9 ROUTE
348    RK    501  0.0013  0.020          TRAP    2.000   0.00

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*
 349 KK SB09 BASIN
 350 BA 0.086
 351 LG 0.10 0.25 4.79 0.49 0
 352 UC 0.683 0.518
 353 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
 354 UA 100
 *

355 KK CP-09 COMBINE
 356 HC 2
 *

357 KK PWRCH
 358 KM POWERLINE CHANNEL (XS 107) & 50% PIMA ROAD CHANNEL (XS 183) HYDROGRAPHS
 359 KM 100-YR, 24-HR FLO-2D MODEL (XS 107)
 360 KM FROM PINNACLE PEAK SOUTH ADMS 100-YR, 24-HR FLO-2D MODEL
 361 BA 7.0
 362 QI 0 0 0 0 0 0 0 0 0 0
 363 QI 0 0 0 0 0 0 0 0 0 0
 364 QI 0 0 0 0 0 0 0 0 0 0
 365 QI 0 0 0 0 0 0 0 0 0 0
 366 QI 0 0 0 0 0 1 1 3 43 495
 367 QI 1099 1198 2055 3747 3658 3175 2822 2378 2084 1898
 368 QI 1699 1499 1331 1179 1047 940 851 773 705 645
 369 QI 597 559 521 488 460 435 410 387 370 356
 370 QI 339 328 317 303 293 281 270 257 258 248
 371 QI 240 237 223 220 214 209 205 201 192 188
 372 QI 180 179 164 158 149 142 137 126 120 117
 373 QI 107 102 97 99 86 83 82 74 70 66
 374 QI 62 59 57 55 52 50 50 48 42 41
 375 QI 40 37 35 40 36 32 31 30 31 30
 376 QI 31 30 24 23 23
 *

377 KK BINFLO
 378 KM TOTAL INFLOW INTO BASIN 53R.
 379 HC 2
 *

380 KK BASIN
 381 KM BASIN STAGE/STORAGE FROM PROPOSED CONTOURS BETWEEN
 382 KM ELEV 1594 AND 1615; BASIN SIDE SLOPES STEEPENED TO 3:1
 383 KM OUTFLOW RATING CURVE FROM CULVERTMASTER FOR 2-60" PIPES
 384 KM THE OUTLET PIPES ARE INLET CONTROLLED.
 385 RS 1 STOR 0
 386 SV 0 44.9 76.8 108.7 140.6 171.5 202.5 233.5 264.5 295.5
 HEC-1 INPUT

1

PAGE 11

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
 387 SV 328.7 362.0 395.2 428.5 461.7 497.2 532.7 568.3 603.8 639.3
 388 SE 1594 1597 1598 1599 1600 1601 1602 1603 1604 1605
 389 SE 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615
 390 SQ 0 94.6 153.4 209.8 244.2 264.5 284.0 302.5 320.1 336.9
 391 SQ 353.0 368.5 383.5 398.0 412.0 425.7 438.9 451.9 464.5 476.8
 *

392 KK BSNRT1
 393 KM 2-60" CMP OULFLOW PIPES FOR BASIN 53R UNDER SR 101L FREEWAY.
 394 KM DOWNSTREAM CONNECTING PIPES ARE 60-INCH RCP AND WILL HAVE
 395 KM EXCESS CAPACITY.
 396 RK 550 0.0052 0.024 CIRC 7.0
 *

397 KK BSNRT2
 398 KM 2-60" RCP PIPES FROM SR 101L FREEWAY TO UNION HILLS DR (BAS 53R OUTFALL)
 399 RK 1200 0.0077 0.013 CIRC 7.0
 *

400 KK SB10 BASIN
 401 BA 0.040
 402 LG 0.15 0.25 4.25 0.55 55
 403 UC 0.233 0.161
 404 UA 0 5.0 16.0 30.0 65.0 77.0 84.0 90.0 94.0 97.0
 405 UA 100
 *

406 KK CP-10 COMBINE


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407      KM      UNION HILLS DR AND 82ND ST (UNION HILLS DR CHANNEL)
408      HC      2
         *

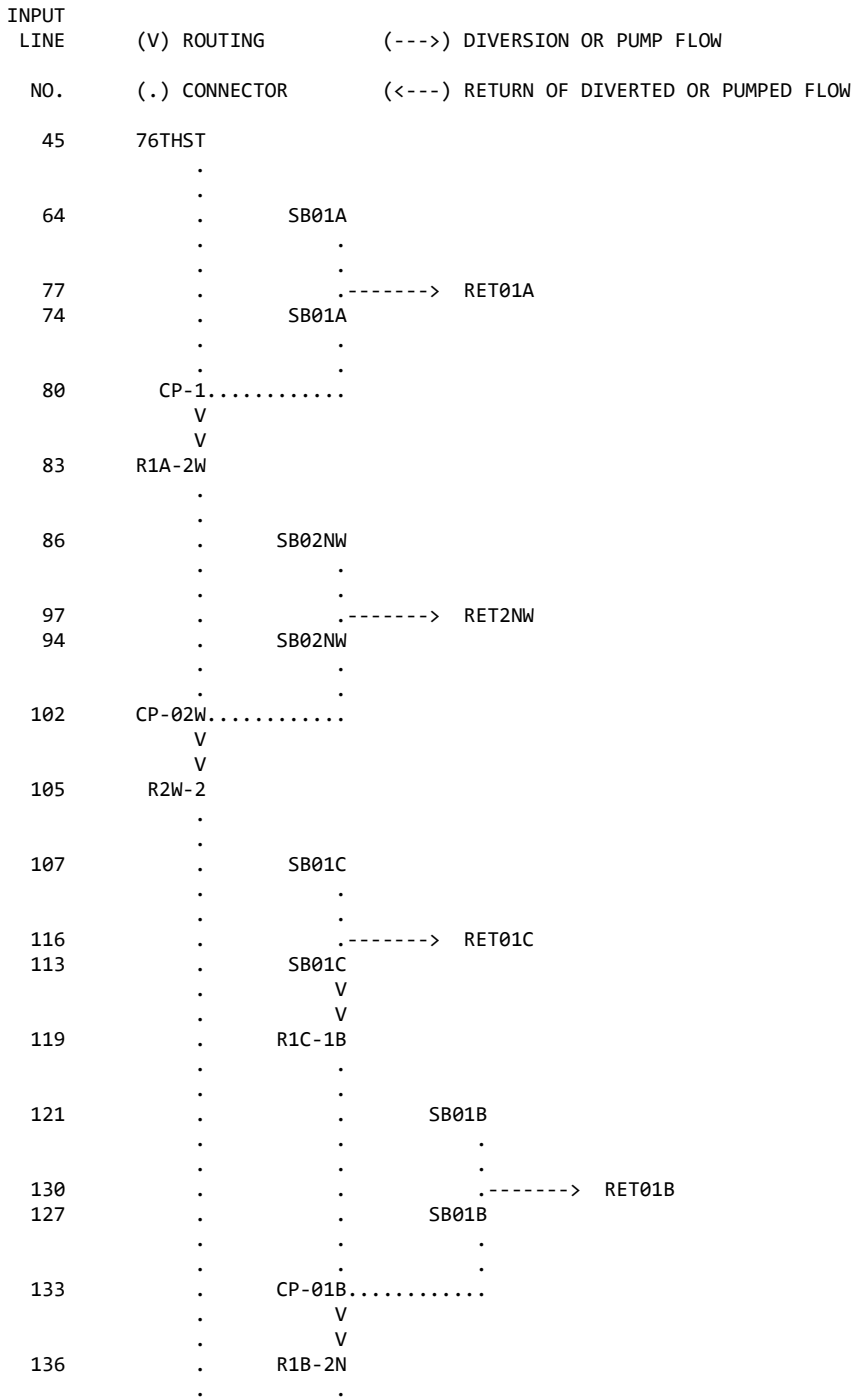
409      KK R10-11  ROUTE
410      KM      UNION HILLS DR CHANNEL FROM 82ND ST TO HAYDEN ROAD
411      RK      1277  0.0014  0.03      TRAP      220      4
         *

412      KK      SB11  BASIN
413      BA      0.071
414      LG      0.15   0.25   4.15   0.58   55
415      UC      0.296  0.232
416      UA      0      5.0   16.0   30.0   65.0   77.0   84.0   90.0   94.0   97.0
417      UA      100
         *

418      KK      CP-11 COMBINE
419      KM      UNION HILLS DR AND HAYDEN ROAD (HAYDEN RD SOUTH CHANNEL)
420      HC      2
         *
421      ZZ

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1 SCHEMATIC DIAGRAM OF STREAM NETWORK



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138 . . . SB02NE
. . . .
147 . . . .-----> RET2NE
144 . . . SB02NE
. . . .
150 . . CP-02N.....
. . . V
. . . V
153 . . R2N-2
. . . .
155 . . . SB02E
. . . .
164 . . . .-----> RET2E
161 . . . SB02E
. . . .
167 . . . . SB02W
. . . .
173 CP-02.....
. . . V
. . . V
175 R2-3
. . . .
178 . . SB03
. . . .
184 CP-03.....
. . . V
. . . V
186 R3-5
. . . .
189 . . SB05
. . . .
195 CP-5A.....
. . . .
197 . . SB07W
. . . .
206 . . . .-----> RET07W
203 . . SB07W
. . . V
. . . V
209 . . R7W-8W
. . . .
213 . . . SB8NW
. . . .
223 . . . .-----> RET8NW
220 . . . SB8NW
. . . V
. . . V
226 . . . R8NW8N
. . . .
230 . . . . SB8NE
. . . .
240 . . . .-----> RET8NE
237 . . . SB8NE
. . . V
. . . V
243 . . . R8NE8N
. . . .
247 . . . . SB8SW
. . . .
257 . . . .-----> RET8SW
254 . . . SB8SW

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260 . . . . . SB8SE
    . . . . .
270 . . . . . -----> RET8SE
267 . . . . . SB8SE
    . . . . .
273 . . . . . CP-08N.....
    . . . . . V
    . . . . . V
276 . . . . . R8N-8W
    . . . . .
280 . . . . . SB08W
    . . . . .
290 . . . . . -----> RET8W
286 . . . . . SB08W
    . . . . .
293 . . . . . CP-08W.....
    . . . . . V
    . . . . . V
295 . . . . . R8W-4
    . . . . .
297 . . . . . SB04
    . . . . .
303 . . . . . CP-4.....
    . . . . . V
    . . . . . V
305 . . . . . R4-5
    . . . . .
308 . . . . . CP-05.....
    . . . . . V
    . . . . . V
312 . . . . . R5-6
    . . . . .
315 . . . . . SB06
    . . . . .
321 . . . . . CP-06.....
    . . . . .
323 . . . . . SB07E
    . . . . . V
    . . . . . V
329 . . . . . R7E-8E
    . . . . .
331 . . . . . SB08E
    . . . . .
337 . . . . . SB09N
    . . . . . V
    . . . . . V
343 . . . . . R9N-R9
    . . . . .
345 . . . . . CP-08E.....
    . . . . . V
    . . . . . V
347 . . . . . R8E-R9
    . . . . .
349 . . . . . SB09
    . . . . .
355 . . . . . CP-09.....
    . . . . .
357 . . . . . PWRCH
    . . . . .
377 . . . . . BINFLO.....

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      .      V
      .      V
380    .      BASIN
      .      V
      .      V
392    .      BSNRT1
      .      V
      .      V
397    .      BSNRT2
      .      .
      .      .
400    .      .      SB10
      .      .      .
      .      .      .
406    .      CP-10.....
      .      V
      .      V
409    .      R10-11
      .      .
      .      .
412    .      .      SB11
      .      .      .
      .      .      .
418    .      CP-11.....

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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****

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*
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*
*      JUN 1998
*
*      VERSION 4.1
*
*
* RUN DATE 26APR21 TIME 09:31:12 *
*
*
*****
*****

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CROSS ROADS EAST DRAINAGE INFRASTRUCTURE
 POWERLINE CORRIDOR
 RESERVE ROUTING OF BASIN 53R N OF SR101 & E OF HAYDEN RD, SCOTTSDALE, AZ
 INFLOW HYDROGRAPHS FROM THE PPSADMS DRAFT FLO-2D MODEL:
 100-YR, 24-HR BASE W/WALLS (W/ MODIFICATIONS TO CONTAIN POWERLINE AND
 PIMA ROAD FLOWS.

PREPARED BY: T.Y.LIN INTERNATIONAL; LAST MODIFIED: 09/14
 MODELERS: RK, MW

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 08/07/18
 MODELERS: MSW, ES
 REVISIONS NOTED WITH HE
 NEW PROP CONDITION MODEL, WITH POWERLINE AND BASIN 53R
 THIS IS THE ULTIMATE CONDITION MODEL

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 10/25/19
 MODELERS: MSW
 XKSAT ADJUSTMENT

REVISED BY: HUBBARD ENGINEERING; LAST MODIFIED: 07/15/20
 MODELERS: MSW, TSW
 REVISIONS NOTED WITH HE (Hubbard Engineering)
 NEW PROPOSED CONDITION MODEL, ACCOUNT FOR WHAT HAS BEEN
 CONSTRUCTED IN PHASE 1 INFRASTRUCTURE, DETAIL OUT NEW CP
 ACCOUNT FOR HIGHER C FACTOR AND IMPERVIOUSNESS, ADD RETENTION
 FIRST FLUSH RETENTION ADDED AS DIVERT CARD WITH VOLUME REQUIRED

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

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*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 2

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*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 36

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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+	HYDROGRAPH AT	SB01C	32.	12.20	5.	1.	1.	0.03
	ROUTED TO							
+		R1C-1B	31.	12.25	5.	1.	1.	0.03
	HYDROGRAPH AT							
+		SB01B	32.	12.20	4.	1.	1.	0.02
	DIVERSION TO							
+		RET01B	2.	11.50	1.	0.	0.	0.02
	HYDROGRAPH AT							
+		SB01B	32.	12.20	4.	1.	1.	0.02
	2 COMBINED AT							
+		CP-01B	63.	12.20	9.	2.	1.	0.05
	ROUTED TO							
+		R1B-2N	62.	12.25	9.	2.	1.	0.05
	HYDROGRAPH AT							
+		SB02NE	35.	12.25	6.	2.	1.	0.03
	DIVERSION TO							
+		RET2NE	3.	11.70	1.	0.	0.	0.03
	HYDROGRAPH AT							
+		SB02NE	35.	12.25	6.	2.	1.	0.03
	2 COMBINED AT							
+		CP-02N	96.	12.25	14.	4.	2.	0.09
	ROUTED TO							
+		R2N-2	95.	12.25	14.	4.	2.	0.09
	HYDROGRAPH AT							
+		SB02E	57.	12.25	10.	3.	2.	0.04
	DIVERSION TO							
+		RET2E	2.	9.65	1.	1.	0.	0.04
	HYDROGRAPH AT							
+		SB02E	57.	12.25	10.	3.	1.	0.04
	HYDROGRAPH AT							
+		SB02W	34.	12.45	5.	1.	1.	0.06
	4 COMBINED AT							
+		CP-02	324.	12.30	64.	20.	10.	0.18
	ROUTED TO							
+		R2-3	324.	12.35	64.	20.	10.	0.18
	HYDROGRAPH AT							
+		SB03	65.	12.15	10.	3.	2.	0.05
	2 COMBINED AT							
+		CP-03	367.	12.35	73.	23.	11.	0.23
	ROUTED TO							
+		R3-5	365.	12.45	72.	23.	11.	0.23
	HYDROGRAPH AT							
+		SB05	190.	12.10	24.	8.	4.	0.13
	2 COMBINED AT							
+		CP-5A	437.	12.45	94.	30.	15.	0.36
	HYDROGRAPH AT							
+		SB07W	68.	12.20	8.	3.	1.	0.05
	DIVERSION TO							
+		RET07W	4.	11.50	2.	1.	0.	0.05
	HYDROGRAPH AT							
+		SB07W	68.	12.20	8.	2.	1.	0.05
	ROUTED TO							
+		R7W-8W	66.	12.60	8.	2.	1.	0.05

+	HYDROGRAPH AT	SB8NW	27.	12.15	4.	1.	1.	0.01
+	DIVERSION TO	RET8NW	1.	9.00	1.	0.	0.	0.01
+	HYDROGRAPH AT	SB8NW	27.	12.15	4.	1.	1.	0.01
+	ROUTED TO	R8NW8N	26.	12.15	4.	1.	1.	0.01
+	HYDROGRAPH AT	SB8NE	29.	12.10	4.	1.	1.	0.01
+	DIVERSION TO	RET8NE	1.	8.95	1.	0.	0.	0.01
+	HYDROGRAPH AT	SB8NE	29.	12.10	4.	1.	1.	0.01
+	ROUTED TO	R8NE8N	28.	12.15	4.	1.	1.	0.01
+	HYDROGRAPH AT	SB8SW	25.	12.10	3.	1.	1.	0.01
+	DIVERSION TO	RET8SW	1.	8.95	0.	0.	0.	0.01
+	HYDROGRAPH AT	SB8SW	25.	12.10	3.	1.	0.	0.01
+	HYDROGRAPH AT	SB8SE	23.	12.15	3.	1.	1.	0.01
+	DIVERSION TO	RET8SE	1.	9.00	0.	0.	0.	0.01
+	HYDROGRAPH AT	SB8SE	23.	12.15	3.	1.	0.	0.01
+	4 COMBINED AT	CP-08N	102.	12.15	14.	4.	2.	0.06
+	ROUTED TO	R8N-8W	101.	12.15	14.	4.	2.	0.06
+	HYDROGRAPH AT	SB08W	118.	12.10	14.	5.	2.	0.06
+	DIVERSION TO	RET8W	3.	9.20	2.	1.	0.	0.06
+	HYDROGRAPH AT	SB08W	118.	12.10	14.	4.	2.	0.06
+	3 COMBINED AT	CP-08W	214.	12.10	36.	11.	5.	0.16
+	ROUTED TO	R8W-4	213.	12.15	36.	11.	5.	0.16
+	HYDROGRAPH AT	SB04	241.	12.10	31.	10.	5.	0.14
+	2 COMBINED AT	CP-4	446.	12.10	66.	21.	10.	0.31
+	ROUTED TO	R4-5	442.	12.20	66.	21.	10.	0.31
+	2 COMBINED AT	CP-05	723.	12.35	158.	50.	25.	0.66
+	ROUTED TO	R5-6	717.	12.40	158.	50.	25.	0.66
	HYDROGRAPH AT							

+		SB06	202.	12.10	27.	9.	4.	0.14
	2 COMBINED AT							
+		CP-06	817.	12.35	184.	59.	29.	0.80
	HYDROGRAPH AT							
+		SB07E	16.	12.40	2.	1.	0.	0.03
	ROUTED TO							
+		R7E-8E	16.	12.45	2.	1.	0.	0.03
	HYDROGRAPH AT							
+		SB08E	39.	12.55	6.	2.	1.	0.08
	HYDROGRAPH AT							
+		SB09N	11.	12.55	3.	1.	0.	0.03
	ROUTED TO							
+		R9N-R9	11.	12.65	3.	1.	0.	0.03
	3 COMBINED AT							
+		CP-08E	63.	12.55	11.	3.	1.	0.13
	ROUTED TO							
+		R8E-R9	63.	12.55	11.	3.	1.	0.13
	HYDROGRAPH AT							
+		SB09	60.	12.45	9.	2.	1.	0.09
	2 COMBINED AT							
+		CP-09	120.	12.50	20.	5.	2.	0.22
	HYDROGRAPH AT							
+		PWRCH	3747.	13.25	1540.	502.	248.	7.00
	2 COMBINED AT							
+		BINFLO	3788.	13.25	1558.	507.	250.	7.22
	ROUTED TO							
+		BASIN	462.	18.45	458.	399.	241.	7.22
	ROUTED TO							
+		BSNRT1	462.	18.50	458.	399.	241.	7.22
	ROUTED TO							
+		BSNRT2	462.	18.50	458.	399.	241.	7.22
	HYDROGRAPH AT							
+		SB10	72.	12.05	8.	3.	1.	0.04
	2 COMBINED AT							
+		CP-10	463.	18.50	459.	400.	242.	7.26
	ROUTED TO							
+		R10-11	463.	18.55	459.	400.	241.	7.26
	HYDROGRAPH AT							
+		SB11	107.	12.10	14.	5.	2.	0.07
	2 COMBINED AT							
+		CP-11	465.	18.55	460.	401.	244.	7.33

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SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL			
						DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR STORM = 1	STORM AREA (SQ MI) =			0.00					
R1A-2W	MANE	0.27	138.22	738.13	1.40	3.00	138.18	738.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2249E+02 EXCESS=0.0000E+00 OUTFLOW=0.2249E+02 BASIN STORAGE=0.2963E-02 PERCENT ERROR= 0.0

FOR STORM = 2	STORM AREA (SQ MI) =			10.00					
R1A-2W	MANE	0.23	132.78	738.11	1.37	3.00	132.73	738.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2206E+02 EXCESS=0.0000E+00 OUTFLOW=0.2206E+02 BASIN STORAGE=0.2963E-02 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R1A-2W MANE 0.23 129.25 738.12 1.36 3.00 129.19 738.00 1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2178E+02 EXCESS=0.0000E+00 OUTFLOW=0.2178E+02 BASIN STORAGE=0.2963E-02 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2W-2 MANE 0.20 160.62 735.42 1.50 3.00 159.58 735.00 1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2435E+02 EXCESS=0.0000E+00 OUTFLOW=0.2435E+02 BASIN STORAGE=0.4089E-02 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R2W-2 MANE 0.28 153.29 735.70 1.46 3.00 152.40 738.00 1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2379E+02 EXCESS=0.0000E+00 OUTFLOW=0.2378E+02 BASIN STORAGE=0.4089E-02 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R2W-2 MANE 0.22 148.68 735.55 1.44 3.00 147.99 738.00 1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2342E+02 EXCESS=0.0000E+00 OUTFLOW=0.2342E+02 BASIN STORAGE=0.4090E-02 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R1C-1B MANE 0.43 32.64 732.90 1.80 3.00 32.39 735.00 1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2599E+01 EXCESS=0.0000E+00 OUTFLOW=0.2599E+01 BASIN STORAGE=0.9756E-13 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R1C-1B MANE 0.39 30.53 732.80 1.67 3.00 30.31 735.00 1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2408E+01 EXCESS=0.0000E+00 OUTFLOW=0.2408E+01 BASIN STORAGE=0.9547E-13 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R1C-1B MANE 0.44 29.15 732.86 1.59 3.00 28.96 735.00 1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2284E+01 EXCESS=0.0000E+00 OUTFLOW=0.2285E+01 BASIN STORAGE=0.9767E-13 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R1B-2N MANE 1.55 64.38 735.51 1.81 3.00 64.19 735.00 1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4913E+01 EXCESS=0.0000E+00 OUTFLOW=0.4913E+01 BASIN STORAGE=0.5632E-04 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R1B-2N MANE 1.51 60.32 734.68 1.67 3.00 60.22 735.00 1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4553E+01 EXCESS=0.0000E+00 OUTFLOW=0.4552E+01 BASIN STORAGE=0.5975E-04 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R1B-2N MANE 1.46 57.82 735.22 1.59 3.00 57.66 735.00 1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4319E+01 EXCESS=0.0000E+00 OUTFLOW=0.4320E+01 BASIN STORAGE=0.5659E-04 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2N-2 MANE 0.26 99.78 735.68 1.80 3.00 99.10 735.00 1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8138E+01 EXCESS=0.0000E+00 OUTFLOW=0.8139E+01 BASIN STORAGE=0.1854E-04 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R2N-2 MANE 0.41 93.34 735.52 1.66 3.00 92.74 735.00 1.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7542E+01 EXCESS=0.0000E+00 OUTFLOW=0.7543E+01 BASIN STORAGE=0.1946E-04 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R2N-2 MANE 0.30 89.45 735.69 1.58 3.00 88.67 735.00 1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7158E+01 EXCESS=0.0000E+00 OUTFLOW=0.7159E+01 BASIN STORAGE=0.1834E-04 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R2-3 MANE 2.04 336.24 739.95 4.22 3.00 335.93 741.00 4.22

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4096E+02 EXCESS=0.0000E+00 OUTFLOW=0.4090E+02 BASIN STORAGE=0.3882E-01 PERCENT ERROR= 0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R2-3 MANE 2.10 317.06 739.89 4.04 3.00 316.94 741.00 4.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3916E+02 EXCESS=0.0000E+00 OUTFLOW=0.3908E+02 BASIN STORAGE=0.3878E-01 PERCENT ERROR= 0.1

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R2-3 MANE 2.15 304.76 739.74 3.92 3.00 304.74 741.00 3.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3802E+02 EXCESS=0.0000E+00 OUTFLOW=0.3794E+02 BASIN STORAGE=0.3635E-01 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R3-5 MANE 2.78 380.48 747.40 3.86 3.00 378.99 747.00 3.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4743E+02 EXCESS=0.0000E+00 OUTFLOW=0.4725E+02 BASIN STORAGE=0.8213E-01 PERCENT ERROR= 0.2

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R3-5 MANE 2.76 359.46 749.07 3.68 3.00 358.16 747.00 3.68

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4525E+02 EXCESS=0.0000E+00 OUTFLOW=0.4507E+02 BASIN STORAGE=0.8573E-01 PERCENT ERROR= 0.2

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R3-5 MANE 2.78 345.68 749.01 3.57 3.00 343.26 747.00 3.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4389E+02 EXCESS=0.0000E+00 OUTFLOW=0.4376E+02 BASIN STORAGE=0.8213E-01 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R7W-8W MANE 3.00 68.93 754.57 1.91 3.00 68.50 756.00 1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4511E+01 EXCESS=0.0000E+00 OUTFLOW=0.4779E+01 BASIN STORAGE=0.9374E-03 PERCENT ERROR= -6.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R7W-8W MANE 3.00 64.32 754.67 1.83 3.00 64.21 756.00 1.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4179E+01 EXCESS=0.0000E+00 OUTFLOW=0.4572E+01 BASIN STORAGE=0.8368E-03 PERCENT ERROR= -9.4

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R7W-8W MANE 3.00 63.27 756.75 1.63 3.00 59.66 759.00 1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3965E+01 EXCESS=0.0000E+00 OUTFLOW=0.4073E+01 BASIN STORAGE=0.8362E-03 PERCENT ERROR= -2.8

FOR STORM = 1 STORM AREA (SQ MI) = 0.00

R8NW8N MANE 0.83 27.24 730.38 2.83 3.00 27.08 729.00 2.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2215E+01 EXCESS=0.0000E+00 OUTFLOW=0.2217E+01 BASIN STORAGE=0.3350E-06 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R8NW8N MANE 0.90 25.74 730.14 2.66 3.00 25.61 729.00 2.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2082E+01 EXCESS=0.0000E+00 OUTFLOW=0.2084E+01 BASIN STORAGE=0.2981E-06 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R8NW8N MANE 0.87 24.80 730.23 2.55 3.00 24.66 729.00 2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1996E+01 EXCESS=0.0000E+00 OUTFLOW=0.1998E+01 BASIN STORAGE=0.2840E-06 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8NE8N MANE 0.80 29.24 728.00 2.83 3.00 29.14 729.00 2.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2259E+01 EXCESS=0.0000E+00 OUTFLOW=0.2263E+01 BASIN STORAGE=0.3312E-06 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R8NE8N MANE 0.87 27.62 728.44 2.66 3.00 27.56 729.00 2.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2124E+01 EXCESS=0.0000E+00 OUTFLOW=0.2127E+01 BASIN STORAGE=0.3201E-06 PERCENT ERROR= -0.2

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R8NE8N MANE 0.87 26.65 727.97 2.55 3.00 26.55 729.00 2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2036E+01 EXCESS=0.0000E+00 OUTFLOW=0.2038E+01 BASIN STORAGE=0.3381E-06 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8N-8W MANE 0.63 104.30 729.26 2.83 3.00 104.19 729.00 2.83

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8393E+01 EXCESS=0.0000E+00 OUTFLOW=0.8394E+01 BASIN STORAGE=0.4795E-07 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R8N-8W MANE 0.63 98.64 729.78 2.66 3.00 98.54 729.00 2.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7889E+01 EXCESS=0.0000E+00 OUTFLOW=0.7890E+01 BASIN STORAGE=0.4709E-07 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R8N-8W MANE 0.51 95.24 729.83 2.55 3.00 94.91 729.00 2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7563E+01 EXCESS=0.0000E+00 OUTFLOW=0.7564E+01 BASIN STORAGE=0.4620E-07 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8W-4 MANE 0.71 221.46 727.41 2.55 3.00 220.48 729.00 2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2196E+02 EXCESS=0.0000E+00 OUTFLOW=0.2197E+02 BASIN STORAGE=0.3358E-03 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R8W-4 MANE 0.64 209.50 727.30 2.41 3.00 208.59 729.00 2.41

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2072E+02 EXCESS=0.0000E+00 OUTFLOW=0.2072E+02 BASIN STORAGE=0.3435E-03 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R8W-4 MANE 0.73 201.38 727.98 2.27 3.00 200.85 729.00 2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1955E+02 EXCESS=0.0000E+00 OUTFLOW=0.1955E+02 BASIN STORAGE=0.3555E-03 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R4-5 MANE 2.47 458.39 732.52 2.64 3.00 457.71 732.00 2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4297E+02 EXCESS=0.0000E+00 OUTFLOW=0.4302E+02 BASIN STORAGE=0.1194E-02 PERCENT ERROR= -0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R4-5 MANE 2.57 435.01 731.91 2.49 3.00 434.59 732.00 2.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4059E+02 EXCESS=0.0000E+00 OUTFLOW=0.4063E+02 BASIN STORAGE=0.1021E-02 PERCENT ERROR= -0.1

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R4-5 MANE 2.59 416.96 732.36 2.38 3.00 415.70 732.00 2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3868E+02 EXCESS=0.0000E+00 OUTFLOW=0.3873E+02 BASIN STORAGE=0.1074E-02 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R5-6 MANE 2.34 763.02 745.86 3.01 3.00 762.26 744.00 3.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1062E+03 EXCESS=0.0000E+00 OUTFLOW=0.1061E+03 BASIN STORAGE=0.6943E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R5-6 MANE 2.51 707.12 745.07 2.85 3.00 703.42 744.00 2.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1007E+03 EXCESS=0.0000E+00 OUTFLOW=0.1006E+03 BASIN STORAGE=0.6945E-01 PERCENT ERROR= 0.1

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R5-6 MANE 2.52 674.69 746.57 2.74 3.00 673.28 747.00 2.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9685E+02 EXCESS=0.0000E+00 OUTFLOW=0.9676E+02 BASIN STORAGE=0.6943E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R7E-8E MANE 1.93 16.43 748.32 0.80 3.00 16.39 747.00 0.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1113E+01 EXCESS=0.0000E+00 OUTFLOW=0.1112E+01 BASIN STORAGE=0.1951E-04 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R7E-8E MANE 1.94 14.90 748.28 0.72 3.00 14.82 747.00 0.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9964E+00 EXCESS=0.0000E+00 OUTFLOW=0.9968E+00 BASIN STORAGE=0.1628E-04 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R7E-8E MANE 2.13 13.91 748.07 0.67 3.00 13.81 747.00 0.67

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9248E+00 EXCESS=0.0000E+00 OUTFLOW=0.9254E+00 BASIN STORAGE=0.1626E-04 PERCENT ERROR= -0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R9N-R9 MANE 2.43 11.87 758.35 0.97 3.00 11.83 759.00 0.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1453E+01 EXCESS=0.0000E+00 OUTFLOW=0.1451E+01 BASIN STORAGE=0.2431E-04 PERCENT ERROR= 0.1

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R9N-R9 MANE 2.57 10.88 757.62 0.89 3.00 10.84 759.00 0.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1330E+01 EXCESS=0.0000E+00 OUTFLOW=0.1328E+01 BASIN STORAGE=0.2146E-04 PERCENT ERROR= 0.1

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R9N-R9 MANE 2.61 10.25 758.60 0.84 3.00 10.23 759.00 0.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1249E+01 EXCESS=0.0000E+00 OUTFLOW=0.1248E+01 BASIN STORAGE=0.2338E-04 PERCENT ERROR= 0.1

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R8E-R9 MANE 0.31 67.27 753.42 0.85 3.00 67.12 753.00 0.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5955E+01 EXCESS=0.0000E+00 OUTFLOW=0.5955E+01 BASIN STORAGE=0.1051E-04 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R8E-R9 MANE 0.38 60.94 753.41 0.76 3.00 60.79 753.00 0.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5368E+01 EXCESS=0.0000E+00 OUTFLOW=0.5368E+01 BASIN STORAGE=0.1067E-04 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R8E-R9 MANE 0.36 56.87 753.51 0.71 3.00 56.68 753.00 0.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4995E+01 EXCESS=0.0000E+00 OUTFLOW=0.4995E+01 BASIN STORAGE=0.1021E-04 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
BSNRT1 MANE 0.38 462.76 1109.87 2.58 3.00 462.76 1110.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9944E+03 EXCESS=0.0000E+00 OUTFLOW=0.9943E+03 BASIN STORAGE=0.9346E-01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
BSNRT1 MANE 0.38 462.49 1110.02 2.58 3.00 462.49 1110.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9936E+03 EXCESS=0.0000E+00 OUTFLOW=0.9935E+03 BASIN STORAGE=0.9328E-01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
BSNRT1 MANE 0.38 462.32 1110.01 2.58 3.00 462.32 1110.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9930E+03 EXCESS=0.0000E+00 OUTFLOW=0.9929E+03 BASIN STORAGE=0.9316E-01 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
BSNRT2 MANE 0.38 462.76 1110.48 2.58 3.00 462.76 1110.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9943E+03 EXCESS=0.0000E+00 OUTFLOW=0.9941E+03 BASIN STORAGE=0.1069E+00 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
BSNRT2 MANE 0.38 462.49 1110.30 2.58 3.00 462.49 1110.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9935E+03 EXCESS=0.0000E+00 OUTFLOW=0.9933E+03 BASIN STORAGE=0.1067E+00 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
BSNRT2 MANE 0.38 462.32 1110.49 2.58 3.00 462.32 1110.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9929E+03 EXCESS=0.0000E+00 OUTFLOW=0.9927E+03 BASIN STORAGE=0.1065E+00 PERCENT ERROR= 0.0

FOR STORM = 1 STORM AREA (SQ MI) = 0.00
R10-11 MANE 2.34 463.63 1114.77 2.58 3.00 463.63 1113.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9994E+03 EXCESS=0.0000E+00 OUTFLOW=0.9982E+03 BASIN STORAGE=0.1212E+01 PERCENT ERROR= 0.0

FOR STORM = 2 STORM AREA (SQ MI) = 10.00
R10-11 MANE 2.39 463.32 1113.19 2.58 3.00 463.32 1113.00 2.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9983E+03 EXCESS=0.0000E+00 OUTFLOW=0.9972E+03 BASIN STORAGE=0.1068E+01 PERCENT ERROR= 0.0

FOR STORM = 3 STORM AREA (SQ MI) = 20.00
R10-11 MANE 2.35 463.12 1115.43 2.57 3.00 463.12 1113.00 2.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9977E+03 EXCESS=0.0000E+00 OUTFLOW=0.9964E+03 BASIN STORAGE=0.1562E+01 PERCENT ERROR= 0.0

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

Appendix E
Hydrology Calculations
Grayhawk Residences at Cavasson

HYDROLOGIC CALCULATION SUMMARY SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Complete calculations for each concentration point are presented in the attached hydrologic calculation sheets.

Sub-Basin & Concentration Point ID	C Runoff Coefficient			I Intensity			A Area [acres]	Q Peak Discharge		
	Frequency			Frequency				Frequency		
	10-year	50-year	100-year	10-year	50-year	100-year		10-year	50-year	100-year
				[in/hr]				[cfs]		
DA-A	0.90	0.90	0.90	3.52	5.13	5.78	1.25	3.95	5.75	6.48
DA-B	0.90	0.90	0.90	3.66	5.13	5.78	0.57	1.87	2.63	2.96
DA-C	0.90	0.90	0.90	3.66	5.13	5.78	0.21	0.70	0.98	1.11
DA-D	0.90	0.90	0.90	3.66	5.13	5.78	0.40	1.33	1.86	2.09
DA-E	0.90	0.90	0.90	3.66	5.13	5.78	0.87	2.86	4.01	4.52
DA-F	0.90	0.90	0.90	3.66	5.13	5.78	0.48	1.58	2.22	2.50
DA-G	0.90	0.90	0.90	3.66	5.13	5.78	0.31	1.02	1.43	1.62
DA-H	0.90	0.90	0.90	3.66	5.13	5.78	0.42	1.37	1.92	2.17
DA-I	0.90	0.90	0.90	3.66	5.13	5.78	0.35	1.15	1.61	1.81
DA-J	0.90	0.90	0.90	3.66	5.13	5.78	0.42	1.38	1.93	2.17
DA-K	0.90	0.90	0.90	3.66	5.13	5.78	0.57	1.87	2.63	2.96
DA-L	0.90	0.90	0.90	3.66	5.13	5.78	1.38	4.53	6.35	7.16
DA-M	0.90	0.90	0.90	3.66	5.13	5.78	0.44	1.44	2.01	2.27
DA-N	0.90	0.90	0.90	3.66	5.13	5.78	0.19	0.63	0.89	1.00
DA-O	0.90	0.90	0.90	3.66	5.13	5.78	2.11	6.94	9.72	10.95
DA-P	0.90	0.90	0.90	3.66	5.13	5.78	1.23	4.04	5.66	6.37
DA-Q	0.85	0.90	0.90	3.66	5.13	5.78	0.32	1.01	1.50	1.69
DA-R	0.85	0.90	0.90	3.66	5.13	5.78	0.57	1.77	2.62	2.96
DA-S	0.85	0.90	0.90	3.66	5.13	5.78	0.43	1.32	1.96	2.21
DA-T	0.85	0.90	0.90	3.66	5.13	5.78	0.30	0.93	1.38	1.56
DA-U	0.85	0.90	0.90	3.66	5.13	5.78	0.25	0.77	1.14	1.29
DA-V	0.85	0.90	0.90	3.66	5.13	5.78	0.11	0.35	0.53	0.59
DA-W	0.85	0.90	0.90	3.66	5.13	5.78	0.59	1.83	2.71	3.05
DA-X	0.85	0.90	0.90	3.66	5.13	5.78	0.67	2.08	3.09	3.48
DA-Y	0.85	0.90	0.90	3.66	5.13	5.78	0.25	0.78	1.16	1.31
DA-Z	0.85	0.90	0.90	3.66	5.13	5.78	0.29	0.89	1.33	1.50
DA-AA	0.85	0.90	0.90	3.66	5.13	5.78	0.21	0.66	0.98	1.10
DA-AB	0.85	0.90	0.90	3.66	5.13	5.78	0.28	0.87	1.29	1.45
DA-AC	0.85	0.90	0.90	3.66	5.13	5.78	0.71	2.22	3.30	3.71
DA-AD	0.85	0.90	0.90	3.66	5.13	5.78	0.41	1.28	1.90	2.14
DA-AE	0.85	0.90	0.90	3.66	5.13	5.78	0.50	1.55	2.30	2.59
DA-AF	0.85	0.90	0.90	3.66	5.13	5.78	0.76	2.35	3.49	3.93
PreDevelopment A	0.40	0.48	0.50	3.66	5.13	5.78	3.24	4.74	7.97	9.36
PreDevelopment B	0.40	0.48	0.50	3.66	5.13	5.78	2.50	3.66	6.15	7.22
PreDevelopment C	0.40	0.48	0.50	3.66	5.13	5.78	2.24	3.29	5.53	6.49
PreDevelopment D	0.40	0.48	0.50	3.66	5.13	5.78	2.96	4.33	7.29	8.55
PreDevelopment E	0.40	0.48	0.50	3.66	5.13	5.78	4.63	6.78	11.41	13.39

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-A

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	311.25	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.90	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.50	[ft]
Drainage Area (A)=	1.25	[acres]	Elevation _{Difference} :	0.40	[ft]
			Flow Path Slope _{Average} (S)=	0.00129	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽¹⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.039404	11.0	3.52
50	-0.00625	0.04	0.039404	10.0	5.1
100	-0.00625	0.04	0.039404	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 3.95 [cfs]
Q₅₀ = 5.75 [cfs]
Q₁₀₀ = 6.48 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-B

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	47.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.90	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.45	[ft]
Drainage Area (A)=	0.57	[acres]	Elevation _{Difference} :	0.45	[ft]
			Flow Path Slope _{Average} (S)=	0.00957	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.04153	10.0	3.66
50	-0.00625	0.04	0.04153	10.0	5.1
100	-0.00625	0.04	0.04153	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.87 [cfs]
Q₅₀ = 2.63 [cfs]
Q₁₀₀ = 2.96 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-C

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	43.12	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.90	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.45	[ft]
Drainage Area (A)=	0.21	[acres]	Elevation _{Difference} :	0.45	[ft]
			Flow Path Slope _{Average} (S)=	0.01044	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.044201	10.0	3.66
50	-0.00625	0.04	0.044201	10.0	5.1
100	-0.00625	0.04	0.044201	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.70 [cfs]
Q₅₀ = 0.98 [cfs]
Q₁₀₀ = 1.11 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-D

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	47.30	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.90	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.45	[ft]
Drainage Area (A)=	0.40	[acres]	Elevation _{Difference} :	0.45	[ft]
			Flow Path Slope _{Average} (S)=	0.00951	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.042471	10.0	3.66
50	-0.00625	0.04	0.042471	10.0	5.1
100	-0.00625	0.04	0.042471	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.33 [cfs]
Q₅₀ = 1.86 [cfs]
Q₁₀₀ = 2.09 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

**HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601**

Concentration Point ID: DA-E

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	47.83	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.90	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.45	[ft]
Drainage Area (A)=	0.87	[acres]	Elevation _{Difference} :	0.45	[ft]
			Flow Path Slope _{Average} (S)=	0.00941	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
T_c = 11.4*L^{0.5}*K_b^{0.52}*S^{-0.31}*i^{-0.38}

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.040383	10.0	3.66
50	-0.00625	0.04	0.040383	10.0	5.1
100	-0.00625	0.04	0.040383	10.0	5.78

Peak Discharge (Q):
Q = C₂*i*A [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 2.86 [cfs]
Q₅₀ = 4.01 [cfs]
Q₁₀₀ = 4.52 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-F

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	63.13	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.90	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.45	[ft]
Drainage Area (A)=	0.48	[acres]	Elevation _{Difference} :	0.45	[ft]
			Flow Path Slope _{Average} (S)=	0.00713	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.041989	10.0	3.66
50	-0.00625	0.04	0.041989	10.0	5.1
100	-0.00625	0.04	0.041989	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.58 [cfs]
Q₅₀ = 2.22 [cfs]
Q₁₀₀ = 2.50 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-H

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	58.46	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1634.00	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.10	[ft]
Drainage Area (A)=	0.42	[acres]	Elevation _{Difference} :	0.90	[ft]
			Flow Path Slope _{Average} (S)=	0.01540	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.042375	10.0	3.66
50	-0.00625	0.04	0.042375	10.0	5.1
100	-0.00625	0.04	0.042375	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.37 [cfs]
Q₅₀ = 1.92 [cfs]
Q₁₀₀ = 2.17 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-I

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona County: Maricopa Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	82.76	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1634.10	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.29	[ft]
Drainage Area (A)=	0.35	[acres]	Elevation _{Difference} :	1.81	[ft]
			Flow Path Slope _{Average} (S)=	0.02187	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽¹⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.042861	10.0	3.66
50	-0.00625	0.04	0.042861	10.0	5.1
100	-0.00625	0.04	0.042861	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.15 [cfs]
Q₅₀ = 1.61 [cfs]
Q₁₀₀ = 1.81 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-J

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	71.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1630.65	[ft]
Drainage Area (A)=	0.42	[acres]	Elevation _{Difference} :	2.65	[ft]
			Flow Path Slope _{Average} (S)=	0.03732	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.04237	10.0	3.66
50	-0.00625	0.04	0.04237	10.0	5.1
100	-0.00625	0.04	0.04237	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.38 [cfs]
Q₅₀ = 1.93 [cfs]
Q₁₀₀ = 2.17 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

**HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601**

Concentration Point ID: DA-K

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	40.79	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.50	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.57	[acres]	Elevation _{Difference} :	0.50	[ft]
			Flow Path Slope _{Average} (S)=	0.01226	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
T_c = 11.4*L^{0.5}*K_b^{0.52}*S^{-0.31}*i^{-0.38}

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.041532	10.0	3.66
50	-0.00625	0.04	0.041532	10.0	5.1
100	-0.00625	0.04	0.041532	10.0	5.78

Peak Discharge (Q):
Q = C₂*i*A [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.87 [cfs]
Q₅₀ = 2.63 [cfs]
Q₁₀₀ = 2.96 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-L

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	21.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.25	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.92	[ft]
Drainage Area (A)=	1.38	[acres]	Elevation _{Difference} :	0.33	[ft]
			Flow Path Slope _{Average} (S)=	0.01571	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.039134	10.0	3.66
50	-0.00625	0.04	0.039134	10.0	5.1
100	-0.00625	0.04	0.039134	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 4.53 [cfs]
Q₅₀ = 6.35 [cfs]
Q₁₀₀ = 7.16 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-M

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	61.36	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1634.00	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.70	[ft]
Drainage Area (A)=	0.44	[acres]	Elevation _{Difference} :	0.30	[ft]
			Flow Path Slope _{Average} (S)=	0.00489	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.042252	10.0	3.66
50	-0.00625	0.04	0.042252	10.0	5.1
100	-0.00625	0.04	0.042252	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.44 [cfs]
Q₅₀ = 2.01 [cfs]
Q₁₀₀ = 2.27 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-N

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	63.44	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1636.50	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.65	[ft]
Drainage Area (A)=	0.19	[acres]	Elevation _{Difference} :	2.85	[ft]
			Flow Path Slope _{Average} (S)=	0.04492	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.044475	10.0	3.66
50	-0.00625	0.04	0.044475	10.0	5.1
100	-0.00625	0.04	0.044475	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.63 [cfs]
Q₅₀ = 0.89 [cfs]
Q₁₀₀ = 1.00 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-O

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	126.11	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1636.50	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.45	[ft]
Drainage Area (A)=	2.11	[acres]	Elevation _{Difference} :	3.05	[ft]
			Flow Path Slope _{Average} (S)=	0.02419	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.037979	10.0	3.66
50	-0.00625	0.04	0.037979	10.0	5.1
100	-0.00625	0.04	0.037979	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 6.94 [cfs]
Q₅₀ = 9.72 [cfs]
Q₁₀₀ = 10.95 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-P

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	107.14	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1636.50	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.90	[ft]
Drainage Area (A)=	1.23	[acres]	Elevation _{Difference} :	2.60	[ft]
			Flow Path Slope _{Average} (S)=	0.02427	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽¹⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.039448	10.0	3.66
50	-0.00625	0.04	0.039448	10.0	5.1
100	-0.00625	0.04	0.039448	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.90
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 4.04 [cfs]
Q₅₀ = 5.66 [cfs]
Q₁₀₀ = 6.37 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-Q

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	147.10	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1634.00	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.50	[ft]
Drainage Area (A)=	0.32	[acres]	Elevation _{Difference} :	0.50	[ft]
			Flow Path Slope _{Average} (S)=	0.00340	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.043059	10.0	3.66
50	-0.00625	0.04	0.043059	10.0	5.1
100	-0.00625	0.04	0.043059	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.01 [cfs]
Q₅₀ = 1.50 [cfs]
Q₁₀₀ = 1.69 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-R

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	166.88	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1634.00	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1633.50	[ft]
Drainage Area (A)=	0.57	[acres]	Elevation _{Difference} :	0.50	[ft]
			Flow Path Slope _{Average} (S)=	0.00300	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.041534	10.0	3.66
50	-0.00625	0.04	0.041534	10.0	5.1
100	-0.00625	0.04	0.041534	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.77 [cfs]
Q₅₀ = 2.62 [cfs]
Q₁₀₀ = 2.96 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-S

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	106.08	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1634.00	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.63	[ft]
Drainage Area (A)=	0.43	[acres]	Elevation _{Difference} :	1.37	[ft]
			Flow Path Slope _{Average} (S)=	0.01291	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.042319	10.0	3.66
50	-0.00625	0.04	0.042319	10.0	5.1
100	-0.00625	0.04	0.042319	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.32 [cfs]
Q₅₀ = 1.96 [cfs]
Q₁₀₀ = 2.21 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

**HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601**

Concentration Point ID: DA-T

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	57.29	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.25	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.55	[ft]
Drainage Area (A)=	0.30	[acres]	Elevation _{Difference} :	0.70	[ft]
			Flow Path Slope _{Average} (S)=	0.01222	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
T_c = 11.4*L^{0.5}*K_b^{0.52}*S^{-0.31}*i^{-0.38}

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.043268	10.0	3.66
50	-0.00625	0.04	0.043268	10.0	5.1
100	-0.00625	0.04	0.043268	10.0	5.78

Peak Discharge (Q):
Q = C₂*i*A [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.93 [cfs]
Q₅₀ = 1.38 [cfs]
Q₁₀₀ = 1.56 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-U

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	32.76	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.25	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.83	[ft]
Drainage Area (A)=	0.25	[acres]	Elevation _{Difference} :	0.42	[ft]
			Flow Path Slope _{Average} (S)=	0.01282	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.043789	10.0	3.66
50	-0.00625	0.04	0.043789	10.0	5.1
100	-0.00625	0.04	0.043789	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.77 [cfs]
Q₅₀ = 1.14 [cfs]
Q₁₀₀ = 1.29 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

**HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601**

Concentration Point ID: DA-V

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	43.51	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.25	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.70	[ft]
Drainage Area (A)=	0.11	[acres]	Elevation _{Difference} :	0.55	[ft]
			Flow Path Slope _{Average} (S)=	0.01264	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
T_c = 11.4*L^{0.5}*K_b^{0.52}*S^{-0.31}*i^{-0.38}

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.045896	10.0	3.66
50	-0.00625	0.04	0.045896	10.0	5.1
100	-0.00625	0.04	0.045896	10.0	5.78

Peak Discharge (Q):
Q = C₂*i*A [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.35 [cfs]
Q₅₀ = 0.53 [cfs]
Q₁₀₀ = 0.59 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-W

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	68.19	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.25	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.80	[ft]
Drainage Area (A)=	0.59	[acres]	Elevation _{Difference} :	0.45	[ft]
			Flow Path Slope _{Average} (S)=	0.00660	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽¹⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.041445	10.0	3.66
50	-0.00625	0.04	0.041445	10.0	5.1
100	-0.00625	0.04	0.041445	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.83 [cfs]
Q₅₀ = 2.71 [cfs]
Q₁₀₀ = 3.05 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-X

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	39.35	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1632.16	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.50	[ft]
Drainage Area (A)=	0.67	[acres]	Elevation _{Difference} :	0.66	[ft]
			Flow Path Slope _{Average} (S)=	0.01677	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.041092	10.0	3.66
50	-0.00625	0.04	0.041092	10.0	5.1
100	-0.00625	0.04	0.041092	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 2.08 [cfs]
Q₅₀ = 3.09 [cfs]
Q₁₀₀ = 3.48 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-Y

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	120.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1631.90	[ft]
Drainage Area (A)=	0.25	[acres]	Elevation _{Difference} :	1.40	[ft]
			Flow Path Slope _{Average} (S)=	0.01167	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.043751	10.0	3.66
50	-0.00625	0.04	0.043751	10.0	5.1
100	-0.00625	0.04	0.043751	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.78 [cfs]
Q₅₀ = 1.16 [cfs]
Q₁₀₀ = 1.31 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-Z

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.29	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.043383	10.0	3.66
50	-0.00625	0.04	0.043383	10.0	5.1
100	-0.00625	0.04	0.043383	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.89 [cfs]
Q₅₀ = 1.33 [cfs]
Q₁₀₀ = 1.50 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-AA

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.21	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.044217	10.0	3.66
50	-0.00625	0.04	0.044217	10.0	5.1
100	-0.00625	0.04	0.044217	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.66 [cfs]
Q₅₀ = 0.98 [cfs]
Q₁₀₀ = 1.10 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-AB

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.28	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency				T _c	i
[yr]	m	b	K _b	[min]	[in/hr]
10	-0.00625	0.04	0.043462	10.0	3.66
50	-0.00625	0.04	0.043462	10.0	5.1
100	-0.00625	0.04	0.043462	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 0.87 [cfs]
Q₅₀ = 1.29 [cfs]
Q₁₀₀ = 1.45 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-AC

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.71	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.040914	10.0	3.66
50	-0.00625	0.04	0.040914	10.0	5.1
100	-0.00625	0.04	0.040914	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 2.22 [cfs]
Q₅₀ = 3.30 [cfs]
Q₁₀₀ = 3.71 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-AD

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.41	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.042415	10.0	3.66
50	-0.00625	0.04	0.042415	10.0	5.1
100	-0.00625	0.04	0.042415	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.28 [cfs]
Q₅₀ = 1.90 [cfs]
Q₁₀₀ = 2.14 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-AE

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona

County: Maricopa

Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.50	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.041896	10.0	3.66
50	-0.00625	0.04	0.041896	10.0	5.1
100	-0.00625	0.04	0.041896	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 1.55 [cfs]
Q₅₀ = 2.30 [cfs]
Q₁₀₀ = 2.59 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

HYDROLOGIC DESIGN DATA SHEET
RATIONAL METHOD
Hubbard Engineering
Project No. 18114-601

Concentration Point ID: DA-AF

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Location Data

State: Arizona County: Maricopa Jurisdiction: City of Scottsdale

Design Data

Design Frequency:	100	[yrs]	Flow Path Length (L)=	30.00	[ft]
Check Frequency:	50	[yrs]	Elevation _{Max} :	1633.30	[ft]
Check Frequency:	10	[yrs]	Elevation _{Min} :	1632.00	[ft]
Drainage Area (A)=	0.76	[acres]	Elevation _{Difference} :	1.30	[ft]
			Flow Path Slope _{Average} (S)=	0.04333	[ft/ft]

Watershed Characteristics

Hydrologic Soil Group: --
Vegetation Cover: <25 [%]
Classification Type: A (Reference, Table 3.1, Page 3-3)

Rational Method Computations

Time of Concentration, (T_c)⁽²⁾:
 $T_c = 11.4 * L^{0.5} * K_b^{0.52} * S^{-0.31} * i^{-0.38}$

L	[mi]	K _b =m Log A + b
S	[ft/mi]	m= -0.00625
i	[in/hr]	b= 0.04
		A = Area [acres]

Frequency [yr]	m	b	K _b	T _c [min]	i [in/hr]
10	-0.00625	0.04	0.040762	10.0	3.66
50	-0.00625	0.04	0.040762	10.0	5.1
100	-0.00625	0.04	0.040762	10.0	5.78

Peak Discharge (Q):
 $Q = C_2 * i * A$ [cfs]

A [acres]
i [in/hr]
C₂ Runoff Coefficient
C₁₀⁽¹⁾ = 0.85
C₅₀⁽¹⁾ = 0.90
C₁₀₀⁽¹⁾ = 0.90

Q₁₀ = 2.35 [cfs]
Q₅₀ = 3.49 [cfs]
Q₁₀₀ = 3.93 [cfs]

Reference: 1. Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology

Appendix F
Hydraulic Calculations
Grayhawk Residences at Cavasson

HYDRAULIC CALCULATION SHEET

Retention Calculations Hubbard Engineering Project No. 18114-601

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised By:

Date: 06/03/21
Date:

Purpose: Evaluate the required and provided retention volumes in order to assess conformance to project criteria.

Methodology: Calculate the volume of stormwater required to be retained using City of Scottsdale criteria. Calculate the estimated volume of stormwater retained using retention basin geometry.

Criteria: Retain the calculated stormwater run-off for the first flush condition and 100-YEAR 6-HOUR duration storm event.

References: 1. City of Scottsdale *Design Standards and Policies Manual*

Calculations: First Flush Volume Required = $C_{Composite} * D / 12 * A$ [ft³] (Reference 1)

D = 0.5 [in] (First Flush) (Reference 1)
C = 0.90 (Paved Parking) (Reference 1)
P = 2.75 [in] (100 YR 6 HR)

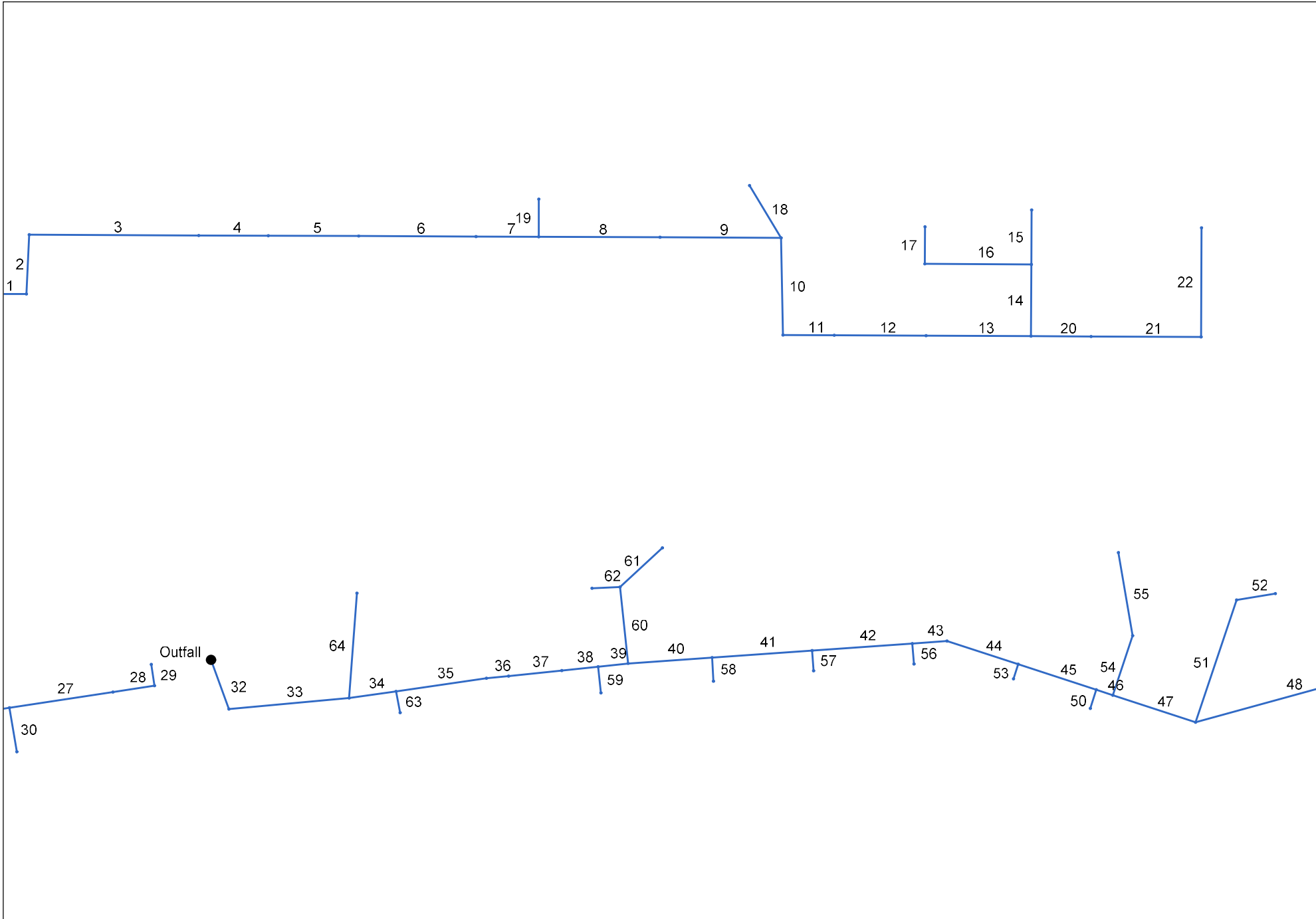
$$\text{Composite } C = (C1 * A1 + C2 * A2 + \dots) / (A1 + A2 + \dots)$$

$$\text{Volume Required} = \text{Composite } C * P / 12 * A$$

Results:

Identifiers Contributory Area ID	CALCULATE RETENTION VOLUME REQUIRED		Volume Required		
	Area [acres]	C	[acre-ft]	[ft ³]	[yd ³]
DA-A	1.20	0.90	0.04	1,958	73
DA-B	0.57	0.90	0.02	937	35
DA-C	0.20	0.90	0.01	330	12
DA-D	0.40	0.90	0.02	657	24
DA-E	0.84	0.90	0.03	1,365	51
DA-F	0.48	0.90	0.02	776	29
DA-G	0.27	0.90	0.01	442	16
DA-H	0.42	0.90	0.02	681	25
DA-I	0.34	0.90	0.01	563	21
DA-J	0.42	0.90	0.02	682	25
DA-K	0.61	0.90	0.02	995	37
DA-L	1.38	0.90	0.05	2,248	83
DA-M	0.45	0.90	0.02	736	27
DA-N	0.22	0.90	0.01	352	13
DA-O	2.14	0.90	0.08	3,497	130
DA-P	1.24	0.90	0.05	2,019	75
DA-Q	0.32	0.90	0.01	529	20
DA-R	0.57	0.90	0.02	928	34
DA-S	0.39	0.90	0.01	641	24
DA-T	0.31	0.90	0.01	503	19
DA-U	0.27	0.90	0.01	435	16
DA-V	0.13	0.90	0.00	206	8
DA-W	0.59	0.90	0.02	959	36
DA-X	0.67	0.90	0.03	1,093	40
DA-Y	0.25	0.90	0.01	410	15
DA-Z	0.29	0.90	0.01	470	17
DA-AA	0.21	0.90	0.01	345	13
DA-AB	0.28	0.90	0.01	456	17
DA-AC	0.71	0.90	0.03	1,166	43
DA-AD	0.41	0.90	0.02	671	25
DA-AE	0.50	0.90	0.02	812	30
DA-AF	0.76	0.90	0.03	1,233	46
Phase 3 Roads Adjacent	0.64	0.95	0.14	6,089	226
Legacy BLVD Adjacent	2.07	0.95	0.45	19,656	728
Miller Road Adjacent	0.52	0.95	0.11	4,929	183
Total Area:	21.04	TOTAL VOLUME REQUIRED:	1.37	59,769.09	2,214.60

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: GH Storm Drain Network.stm

Number of lines: 64

Date: 8/27/2021

Line No.	Inlet ID	Known Q (cfs)	Flow Rate (cfs)	HGL Dn (ft)	HGL Up (ft)	Gnd/Rim El Dn (ft)	Gnd/Rim El Up (ft)	EGL Dn (ft)	EGL Up (ft)	Vel Ave (ft/s)	Invert Dn (ft)	Invert Up (ft)	Line Size (in)
1	Structure - (2)	6.23	37.42	1630.00	1630.04	1636.00	1636.00	1630.24	1630.28	3.89	1626.00	1626.24	42
2	Structure - (3)	0.00	31.19	1630.28	1630.34	1636.00	1637.00	1630.44	1630.50	3.24	1626.24	1626.68	42
3	Structure - (4)	2.99	31.19	1630.50	1630.58	1637.00	1638.00	1630.66	1630.85	3.70	1626.78	1628.03	42
4	Structure - (5)	1.05	28.20	1630.62	1630.36	1638.00	1638.60	1631.33	1631.06	5.62	1628.13	1628.64	36
5	Structure - (6)	2.09	27.15	1630.36	1631.09	1638.60	1639.00	1631.04	1631.78	6.82	1628.74	1629.41	36
6	Structure - (7)	0.00	25.06	1631.09	1631.99	1639.00	1638.00	1631.74	1632.64	6.55	1629.51	1630.38	36
7	Structure - (8)	4.35	25.06	1631.99	1632.55	1638.00	1639.50	1632.64	1633.20	6.74	1630.48	1630.94	36
8	Structure - (9)	2.47	18.12	1632.55	1633.30 j	1639.50	1641.50	1633.08	1633.83	5.44	1631.04	1631.94	36
9	Structure - (10)	0.00	15.65	1633.30	1634.26	1641.50	1642.00	1633.84	1634.80	6.09	1632.04	1632.93	30
10	Structure - (12)	2.34	14.24	1634.30	1635.11	1642.00	1641.30	1634.91	1635.72	6.53	1633.03	1633.75	24
11	Structure - (13)	0.00	11.90	1635.11	1635.47 j	1641.30	1641.10	1635.64	1636.00	5.77	1633.85	1634.23	24
12	Structure - (14)	1.12	11.90	1635.47	1636.25	1641.10	1641.10	1636.00	1636.78	6.14	1634.33	1635.01	24
13	Structure - (71)	0.00	10.78	1636.25	1637.06	1641.10	1642.00	1636.74	1637.55	5.73	1635.11	1635.88	24
14	Structure - (22)	0.00	3.96	1637.06	1637.49 j	1642.00	1642.75	1637.41	1637.84	4.13	1635.98	1636.69	15
15	Structure - (23)	1.79	1.79	1637.49	1637.94 j	1642.75	1642.75	1637.73	1638.17	3.45	1636.79	1637.37	12
16	Structure - (24)	0.00	2.17	1637.49	1638.47 j	1642.75	164.00	1637.77	1638.74	3.92	1636.79	1637.84	12
17	Structure - (25)	2.17	2.17	1638.50	1638.94	164.00	1644.00	1638.77	1639.21	4.47	1637.94	1638.31	12
18	Structure - (11)	1.41	1.41	1634.26	1634.44 j	1642.00	1645.00	1634.46	1634.64	2.71	1633.33	1633.94	12
19	Structure - (26)	2.59	2.59	1632.55	1632.61	1639.50	1640.50	1632.62	1632.68	2.13	1631.04	1631.41	15
20	Structure - (18)	1.69	6.82	1637.06	1637.43	1642.00	1644.00	1637.51	1637.88	5.21	1635.98	1636.42	18
21	Structure - (19)	2.96	5.13	1637.46	1638.27	1644.00	1640.00	1637.88	1638.69	5.17	1636.52	1637.33	15
22	Structure - (20)	2.17	2.17	1638.69	1638.85	1640.00	1640.00	1638.74	1639.06	2.70	1637.43	1638.24	15
23	Structure - (62)	0.00	9.02	1623.66	1623.76	1629.00	1629.00	1624.09	1624.19	5.30	1622.60	1622.69	24

Project File: GH Storm Drain Network.stm	Number of lines: 64	Date: 8/27/2021
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NOTES: ** Critical depth

Line No.	Inlet ID	Known Q (cfs)	Flow Rate (cfs)	HGL Dn (ft)	HGL Up (ft)	Gnd/Rim El Dn (ft)	Gnd/Rim El Up (ft)	EGL Dn (ft)	EGL Up (ft)	Vel Ave (ft/s)	Invert Dn (ft)	Invert Up (ft)	Line Size (in)
24	Structure - (63)	0.00	3.71	1623.76	1623.47	1629.00	1629.00	1624.01	1623.72	3.08	1622.69	1622.80	24
25	Structure - (64)	0.00	3.71	1623.90	1624.60	1629.00	1630.00	1624.25	1624.95	4.72	1622.90	1623.22	12
26	Structure - (65)	0.00	3.71	1624.70	1625.16	1630.00	1632.55	1625.04	1625.51	4.72	1623.32	1623.54	12
27	Structure - (66)	0.00	3.05	1625.51	1626.27	1632.55	1632.00	1625.75	1626.50	3.88	1623.54	1624.06	12
28	Structure - (67)	0.00	3.05	1626.30	1628.75 j	1632.00	1633.00	1626.54	1629.11	4.36	1624.16	1628.00	12
29	Structure - (68)	3.05	3.05	1628.75	1631.75	1633.00	1632.10	1629.11	1632.11	4.84	1628.00	1631.00	12
30	Structure - (69)	0.66	0.66	1625.51	1625.53	1632.55	1634.00	1625.52	1625.54	0.84	1623.64	1623.86	12
31	Structure - (70)	5.31	5.31	1623.76	1623.71	1629.00	1627.30	1624.07	1624.02	3.97	1622.79	1622.90	24
32	Structure - (28)	0.00	44.59	1630.00	1630.04	1635.00	1633.00	1630.20	1630.24	3.57	1626.00	1626.21	48
33	Structure - (29)	3.05	44.59	1630.24	1628.79	1633.00	1633.50	1631.02	1629.57	5.34	1626.31	1626.79	48
34	Structure - (59)	0.00	34.38	1628.79	1628.91	1633.50	1634.00	1629.44	1629.62	6.62	1626.89	1627.08	42
35	Structure - (30)	0.00	32.28	1629.62	1629.66	1634.00	1635.15	1629.91	1630.05	4.66	1627.08	1627.44	42
36	Structure - (31)	0.00	32.28	1629.72	1629.39	1635.15	1634.60	1630.42	1630.08	5.90	1627.54	1627.63	42
37	Structure - (32)	0.00	32.28	1629.50	1629.71 j	1634.60	1634.60	1630.18	1630.39	6.63	1627.73	1627.94	42
38	Structure - (33)	0.00	32.28	1629.82	1629.96	1634.60	1635.00	1630.49	1630.63	6.56	1628.04	1628.18	42
39	Structure - (34)	0.00	30.90	1630.63	1630.02	1635.00	1635.50	1631.30	1630.69	5.44	1628.18	1628.30	42
40	Structure - (35)	0.00	19.76	1630.02	1630.16 j	1635.50	1636.00	1630.42	1630.71	5.51	1628.40	1628.73	36
41	Structure - (36)	0.00	18.45	1630.71	1630.76	1636.00	1636.00	1630.93	1631.10	4.19	1628.73	1629.12	36
42	Structure - (37)	0.00	16.95	1631.10	1631.23	1636.00	1636.50	1631.36	1631.58	4.41	1629.12	1629.52	30
43	Structure - (38)	0.00	15.85	1631.58	1631.61	1636.50	1637.00	1631.79	1631.84	3.77	1629.52	1629.66	30
44	Structure - (39)	0.00	15.85	1631.71	1631.78	1637.00	1637.00	1631.94	1632.08	4.14	1629.76	1630.06	30
45	Structure - (40)	0.00	14.40	1632.08	1632.38	1637.00	1637.00	1632.41	1632.70	4.58	1630.06	1630.38	24
46	Structure - (41)	0.00	13.90	1632.70	1632.77	1637.00	1637.00	1633.01	1633.07	4.42	1630.38	1630.45	24

Project File: GH Storm Drain Network.stm	Number of lines: 64	Date: 8/27/2021
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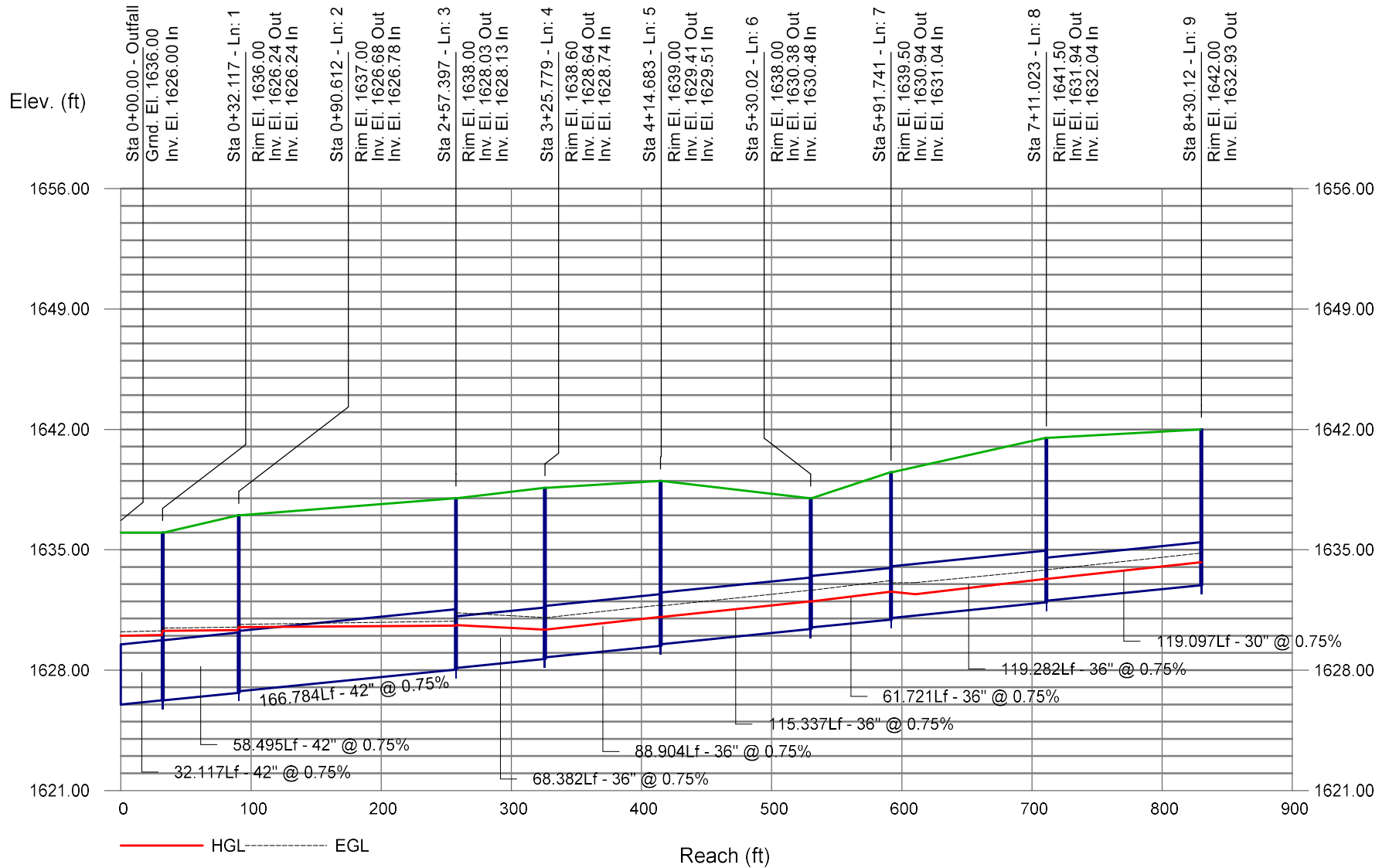
NOTES: ** Critical depth

Line No.	Inlet ID	Known Q (cfs)	Flow Rate (cfs)	HGL Dn (ft)	HGL Up (ft)	Gnd/Rim El Dn (ft)	Gnd/Rim El Up (ft)	EGL Dn (ft)	EGL Up (ft)	Vel Ave (ft/s)	Invert Dn (ft)	Invert Up (ft)	Line Size (in)
47	Structure - (42)	0.00	4.26	1633.07	1633.45	1637.00	1640.00	1633.26	1633.63	3.47	1630.55	1631.65	15
48	Structure - (43)	0.00	2.12	1633.63	1633.82	1640.00	1637.00	1633.66	1633.94	2.00	1631.75	1633.15	18
49	Structure - (44)	2.12	2.12	1633.84	1634.10 j	1637.00	1637.60	1634.04	1634.30	3.47	1633.25	1633.55	18
50	Structure - (49)	0.50	0.50	1632.70	1632.71	1637.00	1640.00	1632.71	1632.71	0.64	1630.38	1630.46	12
51	Structure - (45)	0.00	2.14	1633.63	1634.09	1640.00	1635.00	1633.75	1634.21	2.72	1631.75	1632.26	12
52	Structure - (46)	2.14	2.14	1636.17	1636.62	1635.00	1636.00	1636.44	1636.88	4.43	1635.61	1635.99	12
53	Structure - (50)	1.45	1.45	1632.08	1632.11	1637.00	0.00	1632.13	1632.16	1.85	1630.06	1630.12	12
54	Structure - (47)	3.21	9.64	1633.07	1633.19	1637.00	0.00	1633.22	1633.33	3.07	1630.45	1630.70	24
55	Structure - (48)	6.43	6.43	1633.26	1633.58	0.00	1637.00	1633.47	1633.78	3.64	1630.70	1631.53	18
56	Structure - (51)	1.10	1.10	1631.58	1631.60	1636.50	1637.00	1631.61	1631.63	1.40	1629.52	1629.60	12
57	Structure - (52)	1.50	1.50	1631.10	1631.14	1636.00	1637.00	1631.16	1631.19	1.91	1629.12	1629.20	12
58	Structure - (53)	1.31	1.31	1630.71	1630.74	1636.00	1637.00	1630.75	1630.78	1.67	1628.73	1628.82	12
59	Structure - (57)	1.38	1.38	1630.63	1630.67	1635.00	1635.00	1630.68	1630.72	1.76	1628.18	1628.44	12
60	Structure - (54)	0.00	11.14	1630.02	1630.26 j	1635.50	1635.00	1630.52	1630.76	4.78	1628.30	1629.06	24
61	Structure - (55)	8.14	8.14	1630.26	1630.83	1635.00	1636.00	1630.79	1631.36	5.86	1629.16	1629.73	18
62	Structure - (56)	3.00	3.00	1630.26	1630.44	1635.00	1638.00	1630.48	1630.67	3.82	1629.16	1629.44	12
63	Structure - (60)	2.10	2.10	1629.62	1629.69	1634.00	1638.00	1629.73	1629.81	2.67	1627.08	1627.29	12
64	Structure - (58)	7.16	7.16	1628.79	1629.20	1633.50	1638.00	1629.04	1629.51	4.25	1626.89	1627.92	18

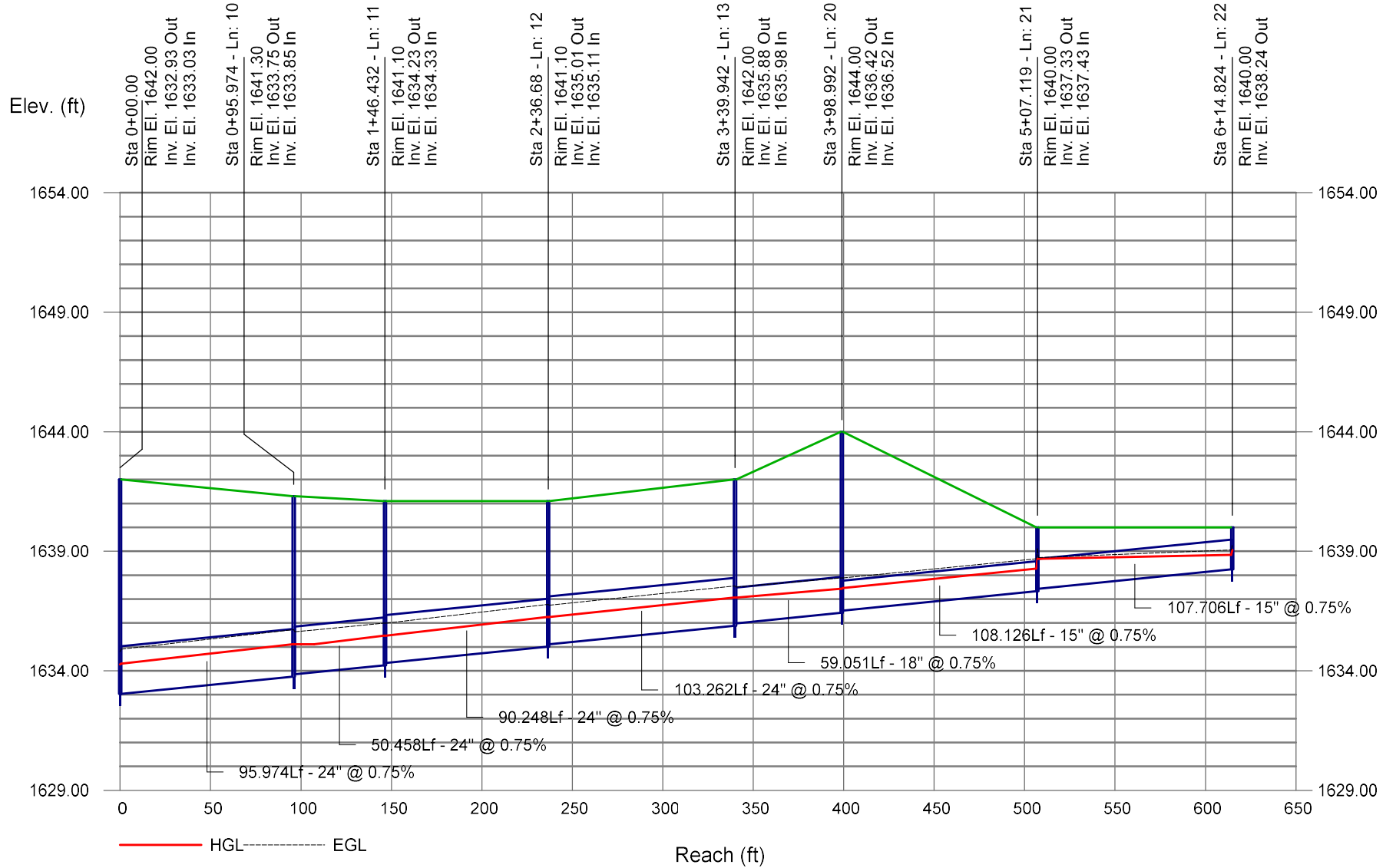
Project File: GH Storm Drain Network.stm	Number of lines: 64	Date: 8/27/2021
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NOTES: ** Critical depth

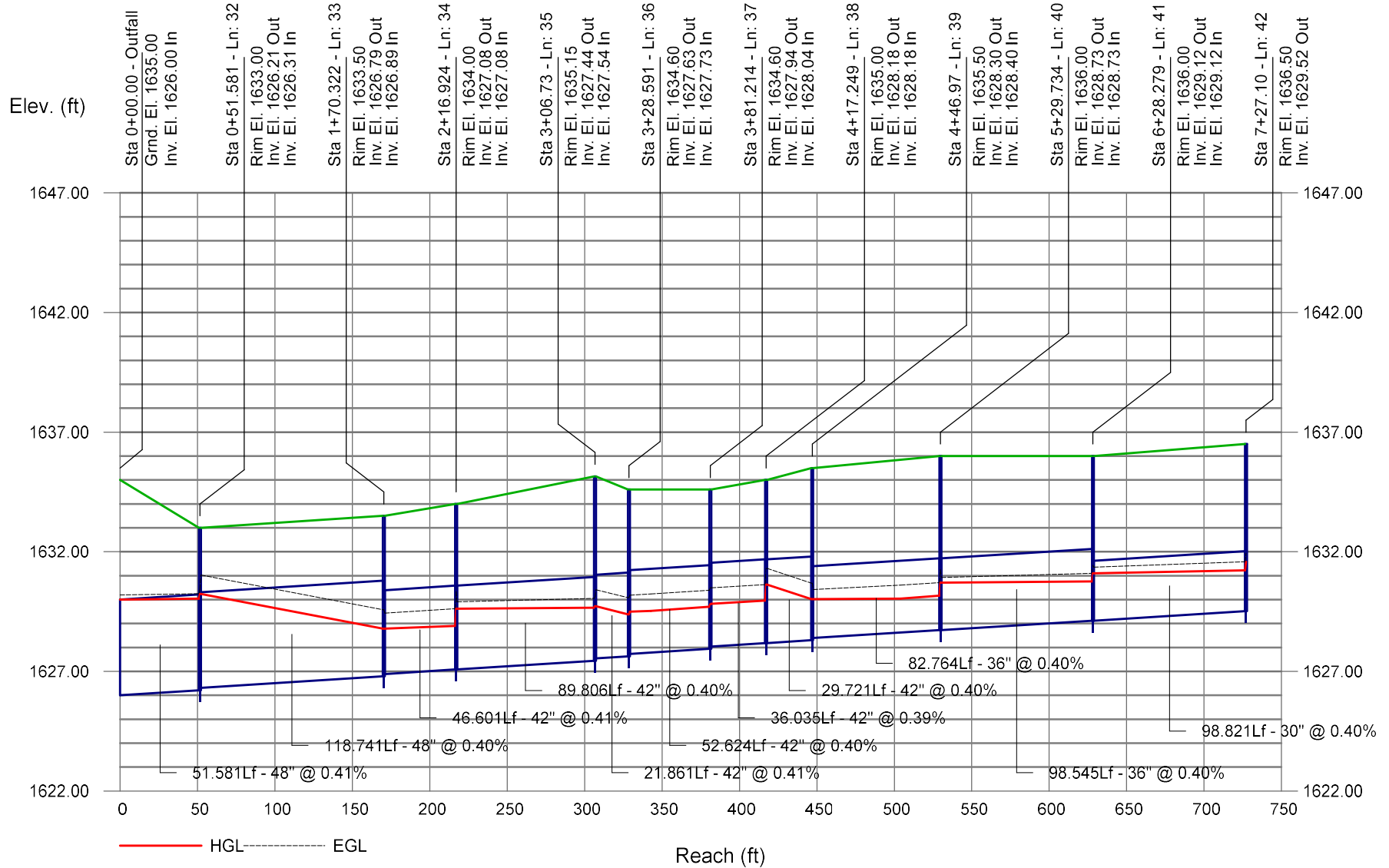
Storm Sewer Profile



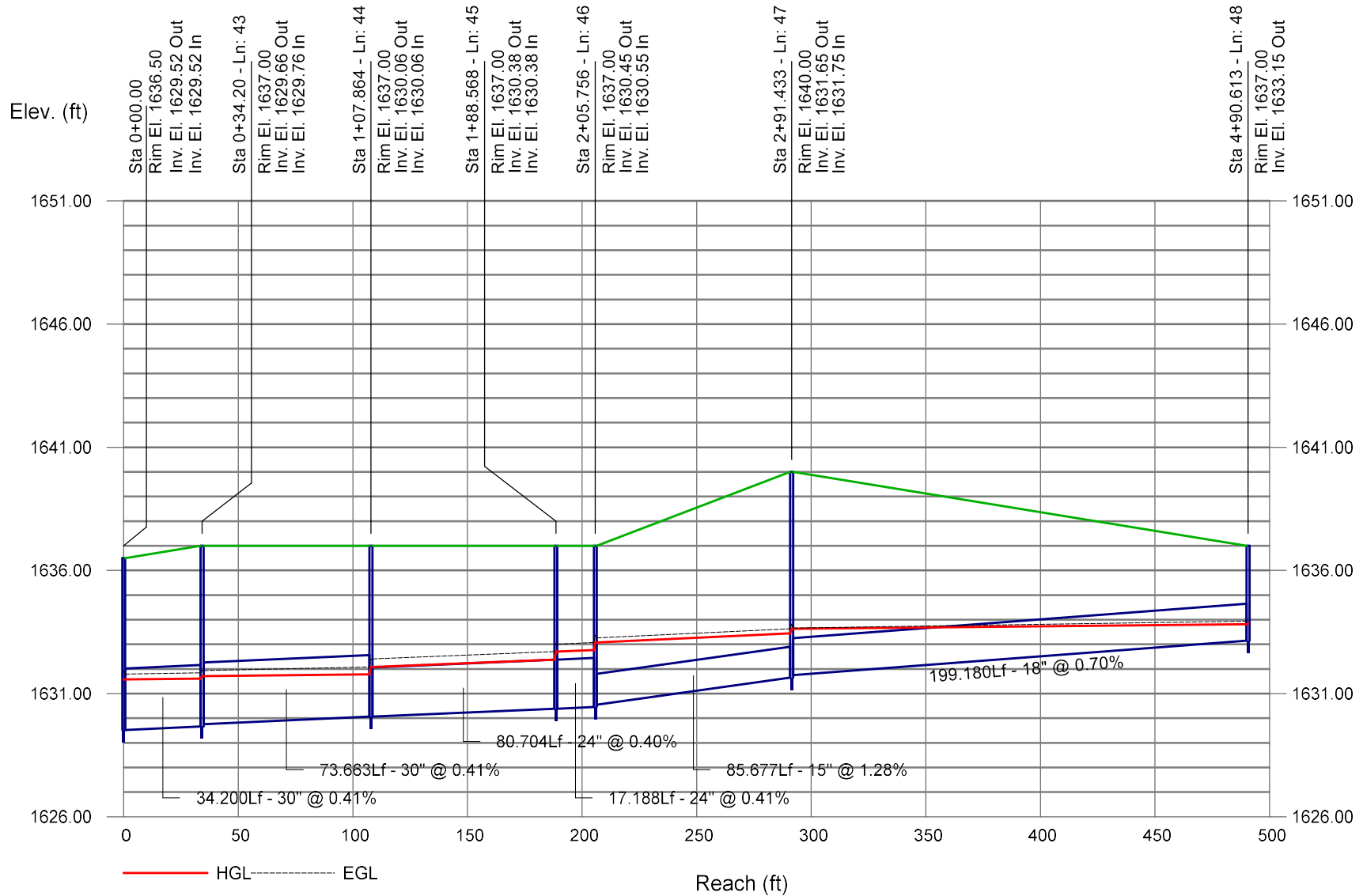
Storm Sewer Profile



Storm Sewer Profile



Storm Sewer Profile



HYDRAULIC CALCULATION SHEET
DA-A Drain Time Calculations
Hubbard Engineering
Project No. 18114-601

Project Name: The Grayhawk Residences at Cavasson
Project No.: 18114-601

Prepared by: TSW
Revised by: TSW

Date: 06/03/21
Date: 08/27/21

Purpose: Calculate the number of drywells required to facilitate drainage of the required volume within 36 hours.

Methodology: Calculate the number of drywells necessary to drain the retention basin and underground storage tanks within 36 hours

Criteria:

1. Drywell drainage capacity must discharge the retention volume provided within 36 hours.
2. Percolation rates have been assumed to be 0.1 cfs and will be field verified during construction

References: 1. Design Standards & Policies Manual, City of Scottsdale, January 2018

Calculations:

$$\text{Number of Drywells Required} = V_{\text{DW}} / (\text{Drywell Infiltration Rate} * 3600 * 36 \text{ hours})$$

$$\text{Drywell Infiltration Rate} = 0.1 \quad \text{[cfs]} \quad (\text{Reference 1})$$

Results:

Identifiers	Infiltration Drainage Capacity Calculations				V _{DW} [ft ³]	Number of Drywells Required		
	Retention Basin ID	Volume ^(Ref. 1) Provided [ft ³]	Bottom ^(Ref. 1) Area [ft ²]	Percolation Rate ^(Ref. 2)			Infiltration Drain Capacity [ft ³]	
				Test Location *				[ft ³ /hr/ft ²] ²
GH Site	60,319.0	0.0	--	--	0.0	5		
Total Number of Drywells =						5		

Conclusion: The number of dual chamber drywells computed is sufficient to discharge the provided volume within 36 hours.

Total Vol. = 60,319.0 [ft³]
D.W. Rate = 0.1 cfs
603190 seconds
167.6 Hours (with no surface infiltration)
No of DW's 5
Total System Drain Time= 33.5 Hours



March 27, 2019

U.S. Army Corps of Engineers
Los Angeles District – Regulatory Division
915 Wilshire Blvd.
Los Angeles, CA 90017

Subject: Statement of Sale of 0.89 Credits for the Cavasson Mixed-Use Development project, Corps permit number SPL-2018-00704, from the Arizona Game and Fish Department In-Lieu Fee Program to Nationwide Reality Investors Ltd.

The Arizona Game and Fish Department has an agreement with the U.S. Army Corps of Engineers – Los Angeles District to operate an In-Lieu-Fee Program. This letter confirms the sale of 0.89 credits of Advance Credits for establishment/enhancement of wetlands and Mesquite Bosque within the Arlington Wildlife Area; an Arizona Game and Fish Commission owned property. These credits are being used as compensatory mitigation for 0.89 acres of impact calculated at a 1:1 ratio for impacts to Waters of The U.S. associated with the Cavasson Mixed-Use Development Project. By selling credits to the above permittee, AGFD is the party responsible for fulfilling the mitigation aspect of Special Condition of the Permit listed above.

Signed,

A handwritten signature in blue ink, appearing to read "Shawn Lowery".

Shawn F. Lowery
Statewide ILF Restoration Program Manager
Wildlife Contracts Branch
Arizona Game and Fish Department

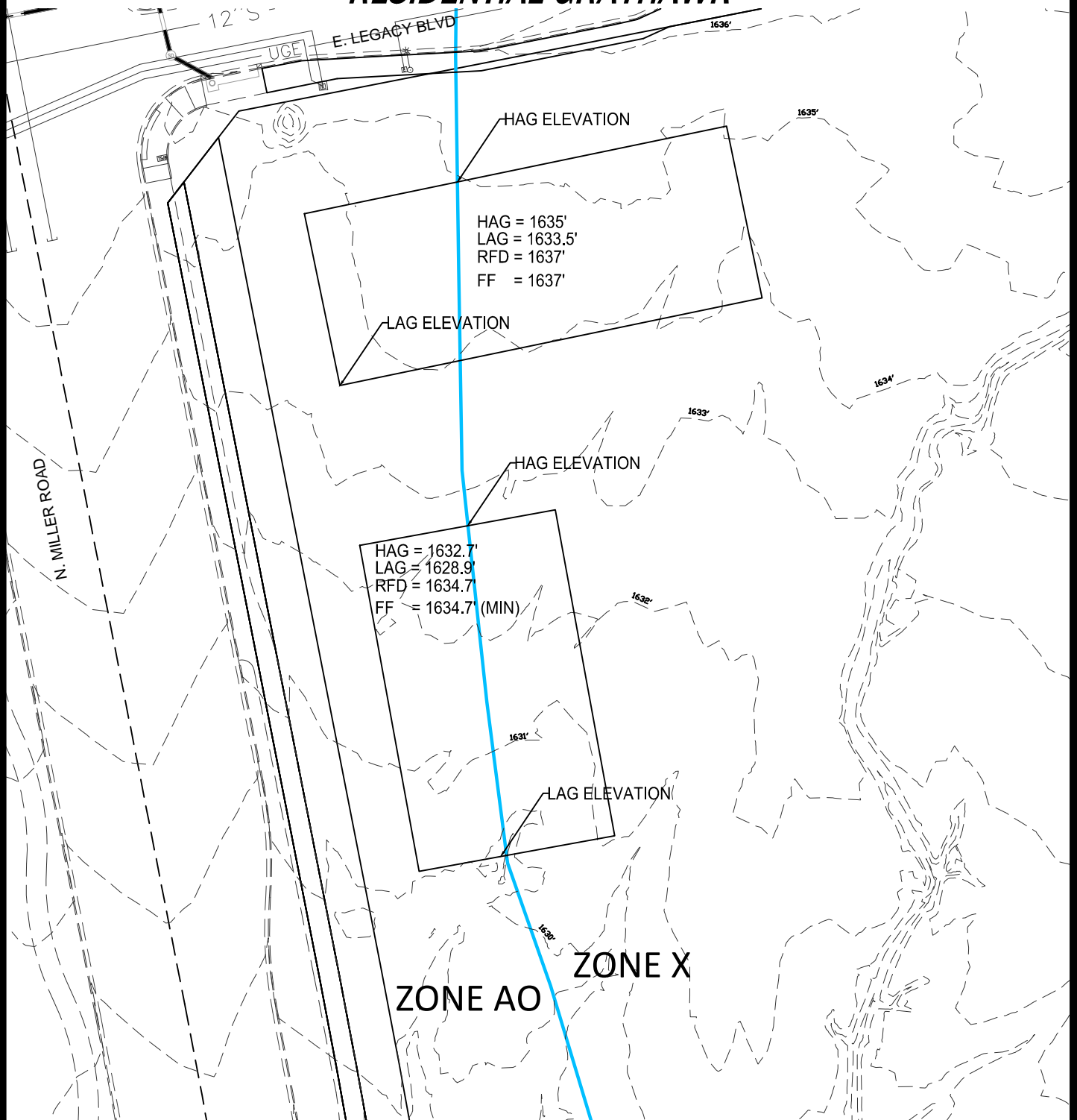
azgfd.gov | 602.942.3000

5000 W. CAREFREE HIGHWAY, PHOENIX AZ 85086

GOVERNOR: DOUGLAS A. DUCEY **COMMISSIONERS:** CHAIRMAN, JAMES R. AMMONS, YUMA | JAMES S. ZIELER, ST. JOHNS | ERIC S. SPARKS, TUSCON
KURT R. DAVIS, PHOENIX | EDWARD "PAT" MADDEN, FLAGSTAFF **DIRECTOR:** TY E. GRAY **DEPUTY DIRECTOR:** TOM P. FINLEY

Appendix H
Original HAG/LAG Documentation
Grayhawk Residences at Cavasson

FLOOD PLAIN CLARIFICATION RESIDENTIAL GRAYHAWK



Proj. No. 18114-601	Date 04-29-2021
Sht: 1 of 1	
Proj. Mangr. GMB	Proj. Eng. MSW

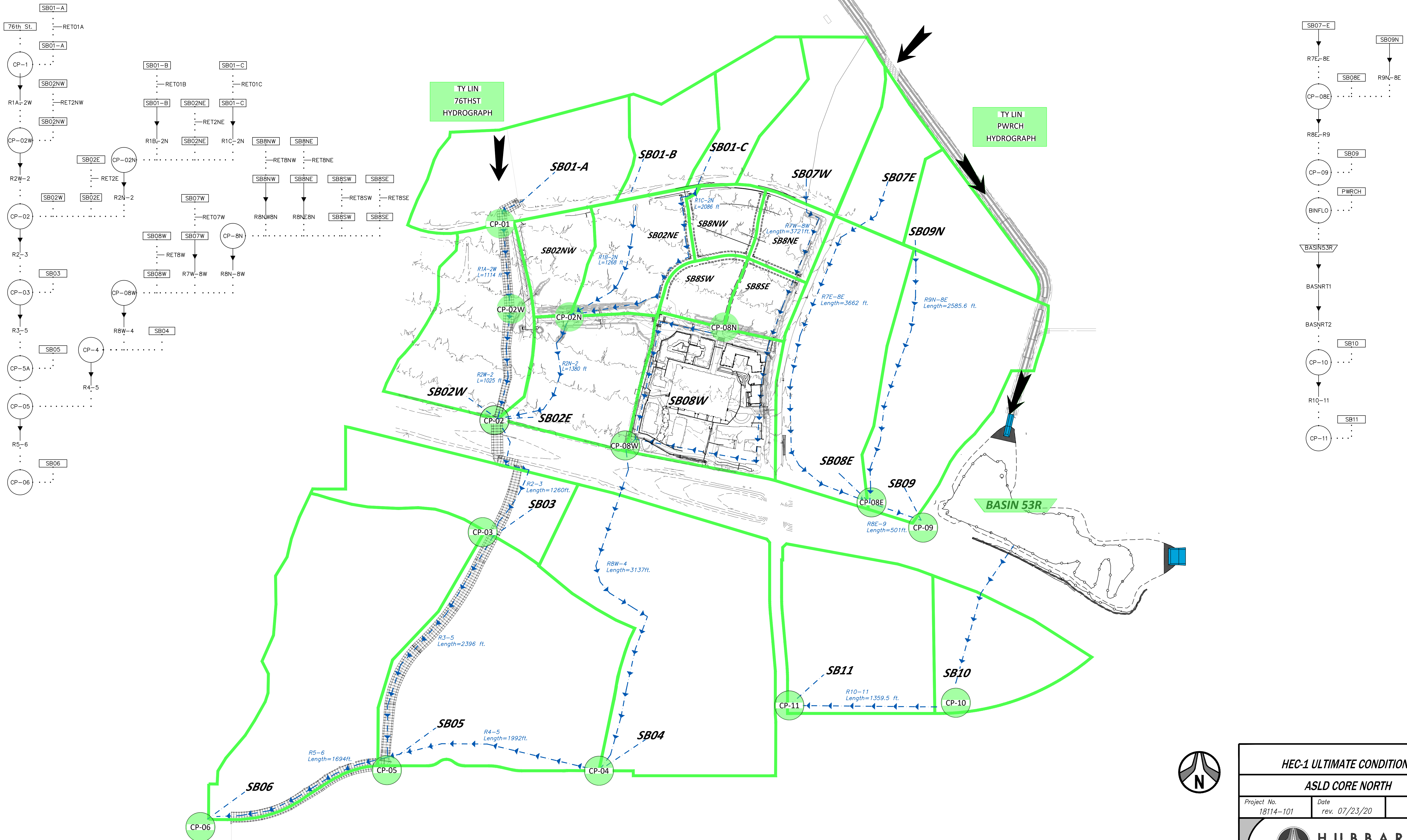
HUBBARD

ENGINEERING

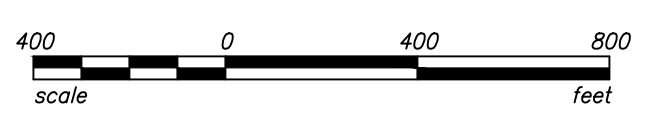
www.hubbardengineering.com
 1201 S. Alma School Rd., Ste. 12000 - Mesa, AZ 85210
 Ph: 480.892.3313


Exhibits
Grayhawk Residences at Cavasson

HEC -1 ULTIMATE CONDITION

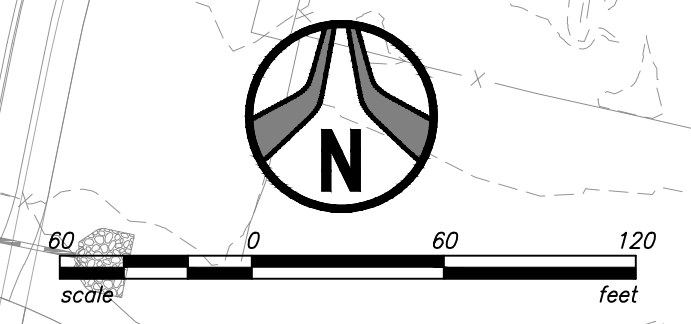


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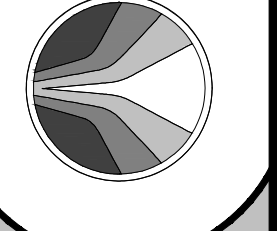
HEC-1 ULTIMATE CONDITIONS		
ASLD CORE NORTH		
Project No. 18114-101	Date rev. 07/23/20	EX-04
 HUBBARD ENGINEERING www.hubbardengineering.com 1201 S. Alma School Rd., Ste. 12000 - Mesa, AZ 85210 Ph: 480.892.3313		

P:\2018\18114\Design-Reports\18114-601\Drawings\Preliminary\Sub 2\Exhibits\Exhibit 1.dwg Aug 28, 2021 - 3:59pm Thelof



1201 S. Alma School Rd.
Suite 12000
Mesa, AZ 85210
PH: 480.892.3313
www.hubbardengineering.com

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DRAINAGE MAP
GRAYHAWK RESIDENCES AT CAVASSON
A PORTION OF THE NORTHWEST QUARTER OF SECTION 26
TOWNSHIP 18N, RANGE 9E, COUNTY, ARIZONA

Date
08/28/2021

Project No.
18114-601

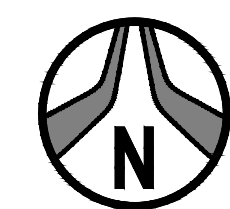
Project Mgr.
G. BROWN

Project Eng.
M. WOLF



EX 02

P:\2021\18114\Design\Reports\18114-601\Design\Primary\Sub 2\Exhibits\Exhibit 4 and 5 Emergency Overflow and Existing Flow Exhibits.dwg Aug 27, 2021 11:22am Tkl



EXISTING HEADWALL INLET TO 10'X3' CONCRETE BOX CULVERT @ 0.44% SLOPE CAPACITY OF 300 CFS CONVEYANCE FOR EMERGENCY OVERFLOW

EMERGENCY OVERFLOW DISCHARGE POINT TO UNDEVELOPED DESERT EXISTING CULVERT OUTLET



BASIN SB01-B EMERGENCY OVERFLOW NG = 1639

BASIN SB01-C EMERGENCY OVERFLOW NG = 1647

EX. Q_{100} = 19 CFS
ULTIMATE Q_{100} = 50 CFS

EX. Q_{100} = 19 CFS
ULTIMATE Q_{100} = 51 CFS

EXISTING SWALE EMERGENCY OVERFLOW ROUTE CAPACITY = 134 CFS

EXISTING SWALE EMERGENCY OVERFLOW ROUTE CAPACITY = 82 CFS

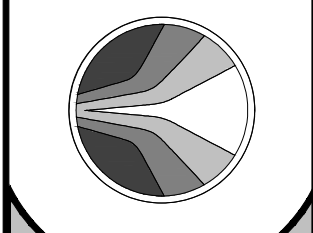
E. LEGACY BOULEVARD

E. CAVASSON BOULEVARD

N. MILLER ROAD

1201 S. Alma School Rd.
Suite 12000
Mesa, AZ 85210
Ph: 480.892.3313
www.hubbardengineering.com

HUBBARD
ENGINEERING



EXISTING OFFSITE FLOW EXHIBIT WITH EXISTING OVERFLOW
GRAYHAWK RESIDENCES AT CAVASSON

Date: 8/27/2021
Project Eng: MSW

Project No.: 18114-601
Project Mgr.: GMB

DESIGNED FOR PRELIMINARY USE. NOT TO BE USED FOR RECORDING OR AS A BASIS FOR CONSTRUCTION.

811
Call before you dig.
1.800.STAKE.IT
602.263.1100

EX. 4

P:\2021\18114\Design\Reports\18114-601\Drawings\Primary\Sub 2\Exhibits\Exhibit 4 and 5 Emergency Overflow and Existing Flows Exhibit.dwg Aug 27, 2021 11:09am Tkhof



EXISTING HEADWALL INLET TO 10'X3' CONCRETE BOX CULVERT @ 0.44% SLOPE CAPACITY OF 300 CFS CONVEYANCE FOR EMERGENCY OVERFLOW

EMERGENCY OVERFLOW DISCHARGE POINT TO UNDEVELOPED DESERT EXISTING CULVERT OUTLET

N. MILLER ROAD

EXISTING SWALE EMERGENCY OVERFLOW ROUTE CAPACITY=134 CFS

BASIN SB01-B EMERGENCY OVERFLOW NG = 1639

E. LEGACY BOULEVARD

EXISTING SWALE EMERGENCY OVERFLOW ROUTE CAPACITY=82 CFS

EX. $Q_{100}=19$ CFS
ULTIMATE $Q_{100}=50$ CFS

BASIN SB01-C EMERGENCY OVERFLOW NG = 1647

EX. $Q_{100}=19$ CFS
ULTIMATE $Q_{100}=51$ CFS

EMERGENCY OVERFLOW IN THE EVENT OF BACK TO BACK STORM EVENTS PRIOR TO TANKS SURCHARGING OUT OF RIMS INV=1622.60

EMERGENCY SURFACE OVERFLOW FOR THE SITE SW=1627.30

PROPOSED OFFSITE STORM DRAIN SYSTEM TO CAPTURE FLOWS FROM NORTH OF LEGACY BOULEVARD AND ROUTE AROUND THE SITE. CONSTRUCTION IS EXPECTED TO BEGIN BY NOVEMBER 2021 CAPACITY = 200 CFS

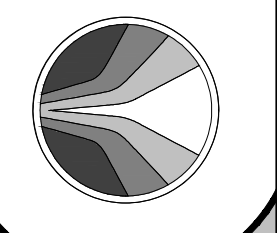
PROPOSED STUB FUTURE EMERGENCY OVERFLOW FOR PARCEL 1C-2 IN THE EVENT OF BACK TO BACK STORM EVENTS INV=1615.00

EMERGENCY OVERFLOW IN THE EVENT THAT THE STORM DRAIN IS CLOGGED SW=1621.50

E. CAVASSON BOULEVARD

1201 S. Alma School Rd.
Suite 12000
Mesa, AZ 85210
Ph: 480.892.3313
www.hubbardengineering.com

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EMERGENCY OVERFLOW EXHIBIT WITH OFFSITE DRAINAGE
GRAYHAWK RESIDENCES AT CAVASSON

Date: 8/27/2021
Project Eng: MSW

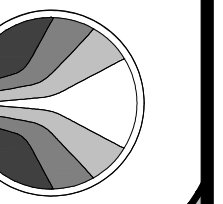
Project No: 18114-601
Project Mgr: GMB



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602.263.1100

SUMMARY OF CATCH BASINS WITH GREATER THAN 0.5' TO
BREAKOVER

CATCH BASIN ID	PONDING DEPTH	AREA DESIGNATION
CB-1	1.10'	OPEN SPACE (LAWN AREA)
CB-2	1.20'	OPEN SPACE (LAWN AREA)



CATCH BASIN EXHIBIT
GRAYHAWK RESIDENCES AT CAVASSON
A PORTION OF THE NORTHWEST QUARTER OF SECTION 26
TOWNSHIP 18N RANGE 10E COUNTY, ARIZONA

Date
12/2/2021

Project No.
18114-601

Project Mgr.
G. BROWN

Project Eng.
M. WOLF

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602.263.1100

CONST. FOR
DIRECT CONSTRUCTION
DO NOT LIMIT LIABILITY
BY RECORDING
THIS AT RISK

