MASTER DRAINAGE REPORT
FOR
DEVELOPMENT UNIT 3/4
AT
EASTMARK

October 3, 2017
WP# 174708

DMB® Master Developer Approval EASTMARK.
Date 10·5·17
Molly Thomaske

Submitted to:

City of Mesa
55 North Center Street
P.O. Box 1466
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Prepared for:

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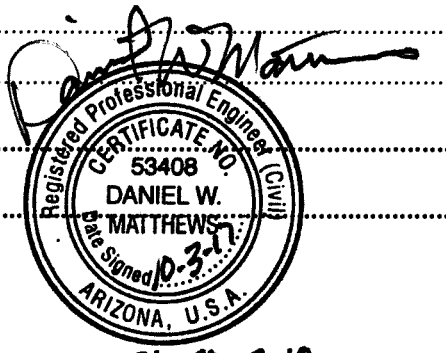
Registered Professional Engineer (Civil)
CERTIFICATE NO. 53408
DANIEL W. MATTHEWS
Date Signed 10-3-17
ARIZONA, U.S.A.
EXPIRES 06-30-2018

APPROVED
By RAP at 3:04 pm, Jan 11, 2018

WOOD/PATEL
MISSION: CLIENT SERVICE®

TABLE OF CONTENTS



EXPIRES 06-30-2018

APPENDICES

Appendix A Interim Condition Data and Hydrology

- Hydrology Interim Condition 100-year, 24-hour HEC-1 Output
- NOAA Atlas Precipitation Data
- Interim Condition HEC-1 Sub-Basin Data
- Interim Condition HEC-1 Soil Data
- Interim Condition HEC-1 Land Use Data
- Interim Condition HEC-1 Routing Data
- Interim Condition Onsite Retention Volume Summary

EXHIBITS

Exhibit 1	Vicinity Map
Exhibit 2	Soils Map
Exhibit 3	Flood Insurance Rate Map
Exhibit 4	Section 404 Jurisdictional Delineation Map
Exhibit 5	Interim Condition HEC-1 Schematic
Exhibit 6	Interim Drainage Map

EXPIRES 06-30-2018

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1.0 INTRODUCTION

1.1 General Background and Project Location

The proposed Development Unit 3/4 (Site) is anticipated to comprise approximately 614 acres within the 3,154-acre Eastmark master planned community in the City of Mesa (City). Development Unit 3/4 (DU 3/4) is planned to include single-family residential, multi-family residential, commercial mixed-use, office, high school, aquatic center, hotel, and open spaces.

This Master Drainage Report has been prepared in accordance with Wood, Patel & Associates, Inc.'s (Wood/Patel's) understanding of the City and the Flood Control District of Maricopa County (FCDMC) drainage requirements.

The Site is located within Sections 15, 22, and 23, Township 1 South, Range 7 East of the Gila and Salt River Meridian. The Site is bounded by Ray Road to the south (from Ellsworth Road to Inspirian Parkway), Inspirian Parkway on the east (from Ray Road to Point Twenty-Two Boulevard), Point Twenty-Two Boulevard on the south (from Inspirian Parkway to Eastmark Parkway), Eastmark Parkway on the east (from Point Twenty-Two Boulevard to Warner Road), Warner Road on the north, and Ellsworth Road on the west (refer to Exhibit 1 – *Vicinity Map*).

The Site consists of multiple automotive test tracks and undisturbed desert. The Site was previously used by General Motors as a desert automobile testing facility. The Powerline Floodway is a major FCDMC facility that provides conveyance of discharge from the Powerline Flood Retarding Structure, approximately three miles east of the Site, and drainage conveyance for stormwater runoff for areas adjacent to the channel. Ultimately, the flow is conveyed to the East Maricopa Floodway (EMF) west of the Site.

1.2 Scope of the DU 3/4 Master Drainage Report

The DU 3/4 Master Drainage Report was prepared to support the development of approximately 975,000 square feet of commercial space, 420,000 square foot high school, 20,000 square foot aquatic center, 525,000 square feet of office space, 45,000 square feet of hotel space, a 5.5-acre church, and 2,032 single-family residential dwelling units on approximately 614 acres. The drainage analysis is consistent with procedures

and standards of the City of Mesa and the Flood Control District of Maricopa County. The proposed drainage plan provides an outline for the required major drainage facilities for storage and conveyance of storm water runoff for the development of DU 3/4 at Eastmark.

Due to the flexible nature of the zoning within Eastmark, land uses and planning have changed from initial planning. Updates to the Master Drainage Report may be required if significant changes are made to the land uses and assumptions utilized to prepare this report. Sizing of onsite drainage infrastructure such as channels and storm drains would vary greatly with different land uses and roadway layouts and is not feasible to accurately plan and therefore is not included. The need, layout, and sizing of such systems will be determined and designed by the Engineer preparing construction documents and final drainage reports.

1.3 Construction Phasing

It is anticipated that the DU 3/4 construction and drainage infrastructure will be phased. Initial development may include the residential, commercial, and school land uses along Point-Twenty Boulevard. It is unknown at this time which portion of the Site will develop in subsequent phases.

2.0 DESCRIPTION OF STUDY AREA

2.1 Existing Soil Conditions

According to the Natural Resources Conservation Service's Soil Survey, Eastmark is located within the Aguila-Carefree soil survey area. The majority of the surface soils onsite are classified as sandy loam, clay loam, or loam. Refer to Exhibit 2 – *Soils Map*, and Appendix A – *Proposed Condition Data and Hydrology* for information pertaining to existing soil conditions.

2.2 Rainfall Seasons

There are two distinct rainfall seasons associated with the desert southwest corresponding to the project area. The first season occurs during the winter months, from November to March, when the area is subjected to occasional storms from the Pacific Ocean. While classified as a rainfall season, there can be long periods where there can be little or no precipitation. Generally, storms occurring during the winter rainfall season are classified as being long-duration, low-intensity storms.

The second rainfall period occurs during the summer months, from June through August, and is commonly referred to as the Monsoon Season. During this season, Arizona is subjected to widespread thunderstorm activity, whose moisture supply originates both in the Gulf of Mexico and along Mexico's west coast. These thunderstorms are typically classified as being short-duration, high-intensity storms, with extreme variability per location.

2.3 FEMA Flood Insurance Rate Map (FIRM)

The Maricopa County, Arizona and Incorporated Areas Flood Insurance Rate Map (FIRM) Panel Number 04013C2760L, dated October 16, 2013, indicates that the western edge of the Site, approximately 405 acres, is within Zone "X" Shaded.

Zone "X" Shaded is defined by FEMA as follows:

> *"Areas of 0.2% annual chance flood: areas of 1% 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."*

Additionally, Panel Number 04013C2760L indicates area beyond the eastern map boundary is within Zone "D". The FEMA website indicates this area is within the Maricopa County, Arizona and Incorporated Areas Flood Insurance Rate Map (FIRM) Panel Number 04013C2780L. The FEMA website shows the panel as not printed and does not indicate a flood zone designation. Based on the Zone "D" markings on Panel Number 04013C2760L, and previously-mapped Panel Number 04013CIND0A, dated September 30, 2005, portions of Eastmark within Panel Number 04013C2780L, approximately 209 acres within DU 3/4, is believed to be within a FEMA Zone "D".

Zone "D" is defined by FEMA as follows:

"Areas in which flood hazards are undetermined."

Refer to Exhibit 3 – *Flood Insurance Rate Map* for an illustration.

2.4 Section 404 Jurisdictional Areas

A Jurisdictional Delineation has been completed by the U.S. Army Corps of Engineers (Corps) for Eastmark. A portion of the Powerline Floodway Channel and a small wash have been designated as Jurisdictional, and lie south of the DU 3/4 boundary. Refer to Exhibit 4 – *Section 404 Jurisdictional Delineation Map* for the locations of Jurisdictional areas.

Proposed disturbances to the jurisdictional areas are required to be permitted with the Corps. A Section 404 Individual Permit will be required for disturbance during development, with conditions that must be adhered to.

2.5 Master Drainage Report Update for Eastmark

The *Master Drainage Report Update for Eastmark*, prepared by Wood/Patel and dated April 24, 2017, was approved by the City of Mesa. Additionally, the *Master Drainage Report Update for Eastmark*, prepared by Wood/Patel, dated October 3, 2017, was submitted concurrently to the City of Mesa for review and re-approval to incorporate development changes and has set the drainage criteria for the Site. The report includes a pre-developed condition HEC-1 model (MPGEX.DAT), as well as a full build-out model (EMDU34.DAT), which are modified versions of the current flood control district area drainage master plan models. The East Mesa Area Drainage Master Plan (ADMP),

prepared in 1998 by Dibble & Associates, Inc. and Hoskin Ryan Consultants, Inc., is a regional drainage study prepared for the FCDMC.

Eastmark is located in the eastern portion of the study, which is bound by the Flood Retarding Structure (FRS) in Pinal County to the east and the EMF to the west. In general, the area drains northeast to southwest, and outlets into the EMF. The ADMP sets the regional drainage constraints for facilities within the study area of Eastmark. The full build-out model was utilized to verify the development of Eastmark does not negatively impact any drainage infrastructure downstream.

3.0 PRE-DEVELOPED DRAINAGE CONDITION

3.1 Pre-Developed Drainage

The Site generally slopes in a southwesterly direction at approximately 0.5 to 1 percent. The peak elevation within the Site is 1,425 feet mean sea level (MSL), located near the intersection of Inspirian Parkway and the Powerline Floodway. The lowest elevation within the Site is approximately 1,390 feet MSL, located at the southwest corner of the Site. A portion of Sub-basins 11A and 11B, east of Copernicus, have been mass graded and partially constructed. The remainder of the Site is covered with typical Sonoran Desert vegetation, including cactus, creosote, etc.

The pre-developed Eastmark hydrology was made up of one sub-basin which drains west to southwest into Ellsworth Road and the Powerline Floodway. This has been modeled accordingly within the current 100-year, 24-hour FCDMC model and the Master Drainage Report model.

3.1.1 Northern Boundary

Runoff along the northern boundary flows parallel to the proposed Warner Road alignment. A temporary berm or swale along the north side of Warner Road may be required if Warner Road is constructed at or below existing grade. Near the western end of the northern boundary, future Warner Road intersects with the existing circle race track previously utilized by General Motors. The track is elevated above adjacent ground, and currently retains a large watershed to the east. If Warner Road is constructed below the track berm elevation, a temporary retention basin is required to store runoff from the tributary watershed, and shall be sized to store the 100-year, 24-hour storm event to match existing conditions leaving the Site. These drainage measures will require design by the site Civil Engineer.

3.1.2 Eastern Boundary

Runoff along the northern half of the eastern boundary adjacent to Eastmark Parkway is bordered by DU 6 South, which is under construction, and retains the 100-year, 2-hour storm event. During the 100-year, 24-hour storm event, flows

will impact DU 3/4 at the DU 6 South outfall locations along the major roadways, which act as the emergency overflow corridors.

The southern half of the eastern boundary adjacent to Inspirian Parkway is bordered by DU 7, which is partially constructed. The majority of DU 7 retains the 100-year, 2-hour storm event, with a portion of Sub-basin 9B retaining the 100-year, 24-hour storm event. During the 100-year, 24-hour storm event, flows impact DU 3/4 at the DU 7 outfall locations along the major roadways, which act as the emergency overflow corridors.

3.1.3 Western Boundary

The western boundary is not impacted by any offsite flows entering the Site. Ellsworth Road is adjacent to the western boundary of the Site. Within Ellsworth Road, an existing storm drain conveys storm water runoff from Ellsworth Road and discharges into the Powerline Floodway, south of Ray Road. This storm drain was sized to convey the 10-year storm event for Ellsworth Road; thus, a portion of the 100-year storm runoff generated from the east half street of Ellsworth Road will need to be retained within DU 3/4.

3.1.4 Southern Boundary

The southern boundary of DU 3/4 is bound by Ray Road and the Powerline Floodway. The floodway provides a low-flow outlet to FRS dams upstream of the Site, as well as storm water conveyance for areas adjacent to the channel. The channel prevents storm water generated to the south from entering the Site. Therefore, no offsite flows impact the southern boundary of the Site.

4.0 PROPOSED DRAINAGE CONDITION

4.1 Proposed Drainage Plan

The drainage concept for DU 3/4 is to route offsite flows through the Site within streets and drainage corridors, while directing onsite storm water runoff to retention basins for storage. Offsite runoff impacting the northern boundary will be collected and conveyed with proposed temporary berms and/or swales to temporary retention basins. Temporary basins shall be sized to store 80% of the runoff from the 100-year, 24-hour storm event for tributary areas to maintain peak flows and runoff volumes leaving the Site at or below pre-development levels. Actual infrastructure will depend upon construction phasing and will be determined and designed by the site Engineer.

Onsite runoff will be collected in roadways for overland flow conveyance to localized retention basins. Where street capacities are exceeded, vertical curb and/or underground storm drain systems or roadside channels may be utilized to convey the excess runoff. Refer to Exhibit 5 – *Interim Condition HEC-1 Schematic* for watershed delineations and locations.

The Great Park retention basins shall be sized to retain runoff volume from a 100-year, 24-hour storm event, utilizing a precipitation depth equal to 3.51 inches or greater, in accordance with *NOAA Atlas 14* and the City of Mesa to maintain peak flows and runoff volumes leaving Eastmark at or below pre-development levels. Additionally, the remainder of Sub-basins 7B and 9A shall retain runoff volume from the 100-year, 24-hour storm event. Retention basins for the remainder of DU 3/4 shall be sized to retain runoff volume from a 100-year, 2-hour storm event, utilizing a precipitation depth of 2.19 inches or greater.

Emergency overflow routes must be provided in the event that retention basin capacities are exceeded due to a storm larger than the design event or back-to-back storms as provided by the final design engineering of each site and development phase. Retention basins shall be designed to drain retained runoff within 36-hours after a storm event. Land uses for undeveloped land depicted in the hydrologic models are conceptual and subject to change, based on the allowable criteria for a PCD.

In all locations, lowest floor elevations shall be set a minimum of 1 foot above the emergency overflow elevation or any 100-year water surface elevation adjacent the Site, whichever is greater.

4.2 Proposed Condition Hydrology

An interim condition HEC-1 model (DU34INT.DAT) was created to estimate peak flows when DU 3/4 is developed prior to the full build-out of Eastmark. The model was created based upon the most current post developed condition model. The undeveloped watersheds within Eastmark and outside DU 3/4 were modeled with a low-density employment land use to represent an automotive proving ground, per the FCDMC's DDMSW program, with exception to previously master planned Development Units that have been developed, are under construction, or are in the permitting process. Those areas, including DU 3S, DU 5N, DU 6N, DU 6S, DU 7, DU 8, and DU 9, were modeled with post-developed land uses. Retention from these developed areas was included within the model.

PRE-DEVELOPED CONDITION		INTERIM CONDITION		FULL BUILD-OUT CONDITION	
Location ID	Discharge	Location ID	Discharge	Location ID	Discharge
CP 75	661cfs	CP75	650 cfs	CP75	634 cfs
79A1	90 cfs	RET17	1 cfs	RET17	1 cfs
79A2	225 cfs	CP19A	57 cfs	CP19A	57 cfs
79A3	156 cfs	RET19	126 cfs	RET19	126 cfs
C79B1	1,090 cfs	78CT79	936 cfs	78CT79	936 cfs

4.3 Proposed Hydraulics

4.3.1 Street Hydraulics

Arterials and major collectors shall be designed to convey the peak flows generated by a 10-year peak storm within the roadway infrastructure, with a spread limited to 1 traffic lane in each direction. All other public roadways shall be designed to convey the peak flows generated by a 10-year peak storm between the curbs. All roadways shall be designed to convey the 100-year storm within the right-of-way and adjacent parkway. Where the peak flows exceed the capacity of the public street to convey the peak flows, storm drains or other drainage facilities shall be installed and sized to carry the excess flows (i.e. when the 10-year peak exceeds the spread criteria or exceeds the curb capacity of the

public street, or when the right-of-way cannot convey the 100-year peak flow). Storm drain and/or channel systems will convey storm water runoff to retention basins located throughout the Site.

4.4 Retention

4.4.1 Retention Storage

The 100-year, 24-hour required retention volume for the DU 3/4 Great Park is estimated to be 20.8 acre-feet, based on the conceptual land use. The 100-year, 2-hour required retention volume for the remainder of DU 3/4 was estimated to be 71.8 acre-feet. Retention volumes have been included in the HEC-1 model. If actual land uses and required retention volumes vary from this report, updates to this report may be required to analyze impacts to downstream drainage infrastructure.

Refer to *Table 5 - Interim Condition Onsite Retention Volume Summary* within Appendix A for a detailed summary of required retention volumes. The proposed retention volumes are based on a 100-year, 2-hour precipitation depth of 2.19 inches, and a 100-year, 24-hour precipitation depth of 3.51 inches, obtained from NOAA Atlas 14 Precipitation Frequency Data. Retention basins will be required to dissipate storm water within 36-hours.

The temporary retention modeled for the offsite portion of Eastmark (Sub-basin 75) was assumed to be 80% of the interim peak-flow. If interim condition berming and storage are modified by construction the assumption of interim storage should be re-evaluated.

4.4.2 Stormwater Quality

The required retention storage volume for the Site exceeds the first flush requirement of storing the first one-half inch of runoff. All runoff will have settlement time within retention basins prior to draining by percolation, drywells, release into natural watercourses, and/or release into existing storm drain systems.

4.5 Maintenance

Ongoing maintenance of the designed or recommended drainage systems will be required to preserve the design integrity and purpose of the drainage system. Failure to provide maintenance can prevent the drainage system from performing to its intended design purpose, and can result in reduced performance. Maintenance is the responsibility of private developers and owners associations for facilities on private property within all easements and private streets, except for drainage structures within public rights-of-way accepted by the City of Mesa for maintenance. Ownership and maintenance responsibilities will be associated with developments discharging to retention facilities and will be managed by the owners associations established for the Site. A regular maintenance program is required to have drainage systems perform to the level of protection or service as presented in this report.

5.0 CONCLUSIONS

Based on the analysis of the *Master Drainage Report for Development Unit 3/4 at Eastmark*, the following conclusions can be made:

1. This *Master Drainage Report for Development Unit 3/4 at Eastmark* is prepared in accordance with Wood, Patel & Associates, Inc.'s understanding of the drainage parameters set by the Flood Control District of Maricopa County, the City of Mesa, and the *Master Drainage Report for Eastmark.*

2. Offsite flows shall be conveyed around and through the Site adequately, per jurisdictional requirements.

3. Peak flows and runoff volumes for the proposed condition 100-year, 24-hour storm shall not negatively impact downstream drainage infrastructure.

4. Onsite retention shall be provided to retain runoff generated by the 100-year, 2-hour storm event for the majority of developed areas within DU 3/4. Additionally, Sub-basins 7B, 9A, and a portion of 9B will be required to retain runoff generated by the 100-year, 24-hour storm event.

6. Flow in excess of onsite storage capacity shall outfall to emergency overflow routes as specified by the design engineer.

7. Lowest floor elevations shall be set a minimum of 1 foot above the adjacent 100-year water surface elevation or emergency outfall water surface elevation, whichever is greater.

8. Drainage infrastructure will be designed in accordance with the appropriate criteria, per the City of Mesa and/or Flood Control District of Maricopa County.

9. Ongoing maintenance is required for all drainage systems in order to assure design performance.

6.0 REFERENCES

1. *Master Drainage Report Update for Eastmark*, Wood, Patel & Associates, Inc., September 25, 2017.

2. *Drainage Design Manual for Maricopa, County, Arizona, Hydrology,* Flood Control District of Maricopa County, August 15, 2013.

3. *Drainage Design Manual for Maricopa County, Arizona, Hydraulics,* Flood Control District of Maricopa County, August 15, 2013.

4. *Drainage Policies and Standards for Maricopa County*, Arizona, Flood Control District of Maricopa County, June 2016.

5. *2017 Engineering & Design Standards,* City of Mesa, July 2017.

6. *Flood Insurance Rate Map 04013C2760L,* Federal Emergency Management Agency (FEMA), October 16, 2013.

7. *HEC-1 Flood Hydrograph Package,* U.S. Army Corps of Engineers, June 1998.

APPENDIX A

INTERIM CONDITION DATA AND HYDROLOGY

Hydrology Interim Condition

100-Year, 24-Hour HEC-1 Output

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 *             JUN   1998               *
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 *           VERSIDN 4.1                *
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*    U.S. ARMY CORPS DF ENGINEERS
*    HYDROLOGIC ENGINEERING CENTER
*          609 SECDND STREET
*       DAVIS, CALIFDRNIA 95616
*            (916) 756-1104
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X       X  X        X                X
X       X  X        X     X          X
X       X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS DF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LDSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGDRITHM


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ID        MODEL REVISED BY:
ID        WODD, PATEL & ASSOCIATES, INC.
ID        DANIEL MATTHEWS, P.E.
ID
ID        FILE PATH:
ID        R:\MESA PROVING GRDUNDS\2014\144173\PROJECT SUPPDRT\REPORTS\DRAINAGE\
ID        DU 5E DRAINAGE MASTER PLAN\HYDROLOGY\DU5EINT.DAT
ID
ID   ****************************************************************************
ID
ID    FILE: EMDU5E.DAT
ID
ID    MODEL REVISED: 04-18-2014
ID
ID    PROJECT: EASTMARK MASTER DRAINAGE UPDATE (FOR DEVELOPMENT UNIT 5 EAST)
ID
ID    THIS IS A PDST DEVELOPED MDDEL REVISION TD REFLECT PLANNED LAND USES
ID        FDR DEVELOPMENT UNIT 5 EAST (DU 5E).
ID
ID    MDDEL REVISION DESCRIPTION:
ID
ID        THIS MODEL IS AN EXERPT OF THE MDDEL PRDVIDED BY THE FLOOD CONTROL
ID        DISTRICT OF MARICDPA CDUNTY (WS4-SEM.DAT). LAND USE FDR DU 5E HAS
ID        CHANGED FRDM GDLF TO INDUSTRIAL.  AREAS THAT PREVIOUSLY DRAINED TD GDLF
ID        WHERE 100-YEAR, 24-HDUR RETENTIDN WAS PROVIDED WILL NOW BE REQUIRED TO
ID        SELF RETAIN RETENTION VDLUME FROM THEIR SITE FOR THE 100-YEAR, 24-HDUR
ID        STDRM PEAK FLDWS HAVE REMAINED THE SAME.  THE REMAINING PDRTIDN DF LAND
ID        THAT WAS ASSOCIATED WITH GDLF HAS BEEN REVISED TO RESIDENTIAL USE.
ID
ID        MODEL REVISED BY:
ID        WDDD, PATEL & ASSDCIATES, INC.
ID        DANIEL MATTHEWS, P.E.
ID
ID        FILE PATH:
ID        R:\MESA PRDVING GROUNDS\2014\144173\PRDJECT SUPPORT\REPDRTS\DRAINAGE\
ID        EASTMARK OVERALL MASTER DRAINAGE UPDATE\HYDRDLOGY\PRDPOSED\EMDU5E.DAT
ID
ID   ****************************************************************************
ID
ID    FILE: EMDU34.DAT
ID
ID    MDDEL REVISED: 04-14-2014
ID
ID    PRDJECT: EASTMARK MASTER DRAINAGE UPDATE FOR DEVELDPMENT UNIT 3/4
ID
ID    THIS IS A POST DEVELDPED MODEL REVISIDN TO REFLECT PLANNED LAND USES
ID        FDR DEVELOPMENT UNIT 3/4 (DU 3/4).
ID
ID    MODEL REVISION DESCRIPTIDN:
ID
ID        THIS MDDEL IS AN EXERPT DF THE MDDEL PROVIDED BY THE FLOOD CDNTRDL
ID        DISTRICT DF MARICOPA COUNTY (WS4-SEM.DAT). LAND USE FDR DU 3/4 HAS BEEN
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 166      ID        REVISED TO REFLECT MORE DETAILED PLANNING.  MINOR ADJUSTMENTS TO LAND
 167      ID        USES OUTSIDE OF DU 3/4 HAVE BEEN MADE.  ADDITIONALLY WATERSHED
 168      ID        BOUNDARIES HAVE BEEN REVISED TO REFLECT A CONCEPTUAL MASS GRADE PLAN
 169      ID        PROVIDED TO WOOD/PATEL BY A CONSULTANT OF THE DEVELOPER DMB MESA
 170      ID        PROVING GROUNDS LLC.
 171      ID
 172      ID        MODEL REVISED BY:
 173      ID        WOOD, PATEL & ASSOCIATES, INC.
 174      ID        DANIEL MATTHEWS, P.E.
 175      ID
 176      ID        FILE PATH:
 177      ID        R:\MESA PROVING GROUNDS\2011\113697.09\PROJECT SUPPORT\REPORTS\
 178      ID        EASTMARK OVERALL DRAINAGE MASTER UPDATE\HYDROLOGY\PROPOSED\EMDU34.DAT
 179      ID
 180      ID     ************************************************************************
 181      ID      FILE: EMDU3S.DAT
 182      ID
 183      ID      MODEL REVISED: 12-11-2013
 184      ID
 185      ID      PROJECT: EASTMARK MASTER DRAINAGE UPDATE FOR DEVELOPMENT UNIT 3 SOUTH
 186      ID
 187      ID      THIS IS A POST DEVELOPED MODEL REVISION TO REFLECT PLANNED LAND USES
 188      ID          FOR DEVELOPMENT UNIT 3 SOUTH (DU-3S).
 189      ID
 190      ID      MODEL REVISION DESCRIPTION:
 191      ID
 192      ID          THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLOOD CONTROL
 193      ID          DISTRICT OF MARICOPA COUNTY (WS4-SEM.DAT). LAND USES FOR DU-3S ARE
 194      ID          CONSISTENT WITH THE PREVIOUS MODEL (EMDU89.DAT) THEREFORE RESULTING
 195      ID          PEAK FLOWS HAVE REMAINED THE SAME.
 196      ID
 197      ID          MODEL REVISED BY:
 198      ID          WOOD, PATEL & ASSOCIATES, INC.
 199      ID          DANIEL MATTHEWS, P.E.
 200      ID
 201      ID          FILE PATH:
 202      ID          R:\MESA PROVING GROUNDS\2011\113697.08\PROJECT SUPPORT\REPORTS\
 203      ID          EASTMARK OVERALL DRAINAGE MASTER UPDATE\HYDROLOGY\PROPOSED\EMDU3S.DAT
 204      ID
 205      ID     ************************************************************************
 206      ID
 207      ID      FILE: EMDU89.DAT
 208      ID
 209      ID      MODEL REVISED: 1-22-2013
 210      ID
 211      ID      PROJECT: EASTMARK 646
 212      ID
 213      ID      THIS IS A POST DEVELOPED MODEL REVISION TO REFLECT UPDATED PLANNING
 214      ID          FOR DEVELOPMENT UNITS 8&9 (DU 8&9).
 215      ID
 216      ID      MODEL REVISION DESCRIPTION:
 217      ID
 218      ID          THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLOOD CONTROL
 219      ID          DISTRICT OF MARICOPA COUNTY (WS4-SEM.DAT).  ONSITE WATERSHEDS WERE
 220      ID          UPDATED TO REFLECT CURRENT PLAN FOR DEVELOPMENT UNITS 8 & 9.
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 221      ID
 222      ID          MODEL REVISED BY:
 223      ID          WOOD, PATEL & ASSOCIATES, INC.
 224      ID          DARREN E. SMITH, P.E.
 225      ID
 226      ID          FILE PATH:
 227      ID          R:\MESA PROVING GROUNDS\2012\123835\PROJECT SUPPORT\REPORTS\
 228      ID          DRAINAGE\HYDROLOGY\PROPOSED\EMDU89.DAT
 229      ID
 230      ID     ************************************************************************
 231      ID
 232      ID          FILE: MPGDU7.DAT
 233      ID
 234      ID          MODEL REVISED: 09-07-2011
 235      ID
 236      ID          PROJECT: MESA PROVING GROUNDS
 237      ID
 238      ID          THIS MODEL SHOULD REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
 239      ID          BELOW.  REFERENCING WS2-NEM.DSS IS STILL REQUIRED.
 240      ID
 241      ID          THIS IS A POST DEVELOPED MODEL REVISION TO REFLECT UPDATED PLANNING
 242      ID          FOR DEVELOPMENT UNIT 7 (DU7)PROVIDED BY ARIZONA LAND DESIGN ON 09/02/201
 243      ID          09/02/2011.
 244      ID
 245      ID          MODEL REVISION DESCRIPTION:
 246      ID
 247      ID          THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLOOD CONTROL
 248      ID          DISTRICT OF MARICOPA COUNTY (WS4-SEM.DAT).  ONSITE WATERSHEDS WERE
 249      ID          UPDATED TO REFLECT A GRADING PLAN PROVIDED BY LD TEAM ON 8/30/2011.
 250      ID          MODELING OF THE POWERLINE FLOODWAY HAS BEEN UPDATED TO REFLECT THE
 251      ID          EXISTING SECTIONS AND SLOPE PER AS-BUILT DRAWINGS ACROSS THE MPG
 252      ID          SITE.
 253      ID
 254      ID          MODEL REVISED BY:
 255      ID          WOOD, PATEL & ASSOCIATES, INC.
 256      ID          DANIEL W. MATTHEWS, E.I.T.
 257      ID
 258      ID          FILE PATH:
 259      ID          R:\MESA PROVING GROUNDS\2011\113697\PROJECT SUPPORT\REPORTS\
 260      ID          DRAINAGE\HYDROLOGY\MPGDU7.DAT
 261      ID
 262      ID
 263      ID     ************************************************************************
 264      ID
 265      ID          FILE: MPG20RT2.DAT
 266      ID
 267      ID          MODEL REVISED: 04-25-2011
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 268          ID
 269          ID        PROJECT: MESA PRDVING GROUNDS
 270          ID
 271          ID        THIS MODEL SHDULD REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
 272          ID        BELDW.  REFERENCING WS2-NEM.DSS IS STILL REQUIRED.
 273          ID
 274          ID        THIS IS A 100-YEAR, 2-HDUR RETENTION SCENARIO MDDEL USING
 275          ID        THE 20MSF CDMMERCIAL SPACE AND 15K DU LAND PLAN PROVIDED
1                                        HEC-1 INPUT                                              PAGE  6

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

 276          ID        BY SWABACK PARTNERS DN 12/12/07.
 277          ID
 278          ID        MODEL REVISION DESCRIPTION:
 279          ID
 280          ID        THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLDDD CONTROL
 281          ID        DISTRICT OF MARICOPA CDUNTY (WS4-SEM.DAT).  ONSITE WATERSHEDS 01 AND
 282          ID        20 WERE UPDATED TD REFLECT THE INCORPORATIDN OF THE FIRST SOLAR SITE
 283          ID        IN THE NORTHEAST CORNER DF DU-6.  WATERSHED 02 WAS SPLIT INTO 02A AND
 284          ID        02B.  LAND USE WAS CHANGED TO INDUSTRIAL FOR 02B AND ENTIRELEY
 285          ID        RESIDENTIAL FOR 02A.
 286          ID        THE FIRST SDLAR SITE RUNOFF WILL NDW BE RETAINED ENTIRELY ONSITE.
 287          ID
 288          ID        MODEL REVISED BY:
 289          ID        WOOD, PATEL & ASSOCIATES, INC.
 290          ID        STEPHEN M. SCINTO, P.E.
 291          ID
 292          ID        FILE PATH:
 293          ID        R:\MESA PROVING GRDUNDS\2010\103564.04\PRDJECT SUPPORT\REPDRTS\
 294          ID        DRAINAGE\HYDROLOGY\POST-DEVELDPED 100YR2HR RETENTIDN MODEL\
 295          ID        MPG20RT2.DAT
 296          ID
 297          ID    ************************************************************************
 298          ID
 299          ID        FILE: MPG20RT2.DAT
 300          ID
 301          ID        MODEL REVISED: 09-16-08
 302          ID
 303          ID        PROJECT: MESA PROVING GROUNDS
 304          ID
 305          ID        THIS MDDEL SHOULD REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
 306          ID        BELOW.  REFERENCING WS2-NEM.DSS IS STILL REQUIRED.
 307          ID
 308          ID        THIS IS A 100-YEAR, 2-HOUR RETENTION SCENARIO MODEL USING
 309          ID        THE 20MSF COMMERCIAL SPACE AND 15K DU LAND PLAN PRDVIDED
 310          ID        BY SWABACK PARTNERS ON 12/12/07.
 311          ID
 312          ID        MODEL REVISIDN DESCRIPTION:
 313          ID
 314          ID        THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLOOD CONTROL
 315          ID        DISTRICT OF MARICOPA CDUNTY (WS4-SEM.DAT).  DNSITE WATERSHEDS 01, 02,
 316          ID        03, AND 06 WERE UPDATED TO REFLECT THE CURRENT GOLF CDURSE
 317          ID        CDNFIGURATION.
 318          ID
 319          ID        MDDEL REVISED BY:
 320          ID        WOOD, PATEL & ASSOCIATES, INC.
 321          ID        DANIEL W. MATTHEWS, E.I.T.
 322          ID
 323          ID        FILE PATH:
 324          ID        R:\MESA PRDVING GROUNDS\2006\062753\PROJECT SUPPORT\HYDRO\MDR-20-15 LAND
 325          ID        PLAN\2ND SUBMITTAL(COM)\HYDROLOGY\MPG20RT2.DAT
 326          ID
 327          ID    ************************************************************************
 328          ID
 329          ID        FILE: MPG20RT2.DAT
 330          ID
1                                        HEC-1 INPUT                                              PAGE  7

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

 331          ID        MODEL REVISED: 05-15-08
 332          ID
 333          ID        PROJECT: MESA PRDVING GROUNDS
 334          ID
 335          ID        MODEL REVISIDN DESCRIPTION:
 336          ID
 337          ID        THIS MDDEL SHDULD REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
 338          ID        BELDW.  REFERENCING WS2-NEM.DSS IS STILL REQUIRED.
 339          ID
 340          ID
 341          ID        THIS IS A 100-YEAR, 2-HOUR RETENTIDN SCENARID MDDEL USING
 342          ID        THE 20MSF COMMERCIAL SPACE AND 15K DU LAND PLAN PROVIDED
 343          ID        BY SWABACK PARTNERS ON 12/12/07.
 344          ID
 345          ID
 346          ID        THIS MODEL IS AN EXERPT OF THE MDDEL PROVIDED BY THE FLDDD CONTROL
 347          ID        DISTRICT DF MARICOPA CDUNTY (WS4-SEM.DAT).  WATERSHED 79A WAS UPDATED
 348          ID        AS REQUESTED BY FLDDD CONTROL DISTRICT OF MARICOPA CDUNTY TO REDUCE THE
 349          ID        PERCENT IMPERVIOUS VALUE FRDM 80% TO 0% TD MATCH THE LAND USE AS MDDELED
 350          ID        WITHIN THE EAST MESA ADMP.
 351          ID
 352          ID        MODEL REVISED BY:
 353          ID        WDDD, PATEL & ASSDCIATES, INC.
 354          ID        DANIEL W. MATTHEWS, E.I.T.
 355          ID
 356          ID        FILE PATH:
 357          ID        R:\MESA PRDVING GRDUNDS\2006\062753\PROJECT SUPPORT\HYDRD\MDR-20-15 LAND
 358          ID        PLAN\2ND SUBMITTAL\POST-DEVELOPED 100YR2HR RETENTIDN MODEL (MPG20RT2)\
 359          ID        MPG20RT2.DAT
 360          ID
 361          ID    ************************************************************************
 362          ID
 363          ID        FILE: MPG20RT2.DAT
 364          ID
 365          ID        MODEL REVISED: 01-08-08
 366          ID
 367          ID        PROJECT: MESA PROVING GRDUNDS
 368          ID
 369          ID        MODEL REVISIDN DESCRIPTIDN:
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```
  370          ID
  371          ID        THIS MODEL SHDULD REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
  372          ID        BELDW.  REFERENCING WS2-NEM.DSS IS STILL REQUIRED.
  373          ID
  374          ID
  375          ID        THIS IS A 100-YEAR, 2-HDUR RETENTION SCENARID MODEL USING
  376          ID        THE 20MSF CDMMERCIAL SPACE AND 15K DU LAND PLAN PRDVIDED
  377          ID        BY SWABACK PARTNERS DN 12/12/07.
  378          ID
  379          ID
  380          ID        THIS MDDEL IS AN EXERPT DF THE MDDEL PROVIDED BY THE FLOOD CONTRDL
  381          ID        DISTRICT DF MARICDPA CDUNTY (WS4-SEM.DAT).  WATERSHEDS 68A, 68B,
  382          ID        70A, 70B, 71, 73B, 73C, 74B, 74C, 75, 77B, 77C, 78B, 78C, AND 79A
  383          ID        HAVE ALL BEEN UPDATED TD REFLECT CURRENT WATERSHED DELINEATIDNS,
  384          ID        NEW DEVELOPMENT, CURRENT RETENTIDN,AND FLOOD RDUTING.  BASIN 75
  385          ID        HAS BEEN UPDATED TD REFLECT PLANNED DEVELDPEMENT FDR THE MESA
1                                        HEC-1 INPUT                                    PAGE  8

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

  386          ID        PRDVING GROUNDS SITE.
  387          ID
  388          ID        MDDEL REVISED BY:
  389          ID        WDDD, PATEL & ASSDCIATES, INC.
  390          ID        DANIEL W. MATTHEWS, E.I.T.
  391          ID
  392          ID        FILE PATH:
  393          ID        R:\MESA PRDVING GROUNDS\2006\062753\PROJECT SUPPDRT\HYDRO\MDR-20-15 LAND
  394          ID        PLAN\HYDRDLDGY\PDST-DEVELDPED 100YR2HR RETENTIDN MODEL (MPG20RT2)\
  395          ID        MPG20RT2.DAT
  396          ID
  397          ID   ************************************************************************
  398          ID
  399          ID
  400          ID    ID  Kirkham Michael:
  401          ID    Last Revised Date:  1/22/03
  402          ID    Filename:  WS4-SEM.DAT
  403          ID
  404          ID    Comments Dated 1/22/03 (CJ)
  405          ID
  406          ID    This model should be used ONLY for the Rittenhouse and Chandler Heights
  407          ID    Basin Design Project - Final Design Analyses.
  408          ID
  409          ID    This model is one of several models that represent the EMF watershed.
  410          ID    This model covers the Southeast Mesa Area and should reference as a DSS
  411          ID    the watershed model for the Northeast Mesa Area (Filename WS2-NEM.DAT).
  412          ID
  413          ID    This model is necessary to determine the input hydrographs for the
  414          ID    Rittenhouse Basin Design HEC-RAS Unsteady State analysis.  To develop
  415          ID    the necessary input hydrographs the following models should be run in order.
  416          ID    Because the files utilize a TAPE21 file to export import hydrographs
  417          ID    between models, prior to running the FIRST model (WS1-NWM.DAT) any existing
  418          ID    TAPE21 file in the directory should be deleted.  The run procedure order is:
  419          ID
  420          ID         1)  WS1-NWM.DAT
  421          ID         2)  WS2-NEM.DAT
  422          ID         3)  WS3-QCSW.DAT
  423          ID         4)  WS4-SEM.DAT (referencing WS2-NEM.DSS for the DSS file)
  424          ID         5)  RT1-BASE.DAT
  425          ID
  426          ID    The necessary input hydrographs for the Rittenhouse Basin analysis
  427          ID    are determined in RT1-BASE.  In that output file, the hydrograph at
  428          ID    RWFLD1 should be exported and used as the input hydrograph at the
  429          ID    EMF Reach 4 Cross Section 17.082.  And the hydrograph at RITTEN should
  430          ID    be exported and used as the input hydrograph for the Rittenhouse Main
  431          ID    Channel at Cross Section 820.00
  432          ID
  433          ID
  434          ID    ************************************************************************
  435          ID    **** NDTE BY PRIMATECH ENGINEERS:                                  ****
  436          ID    **** DATE: 06/12/2001                                              ****
  437          ID    **** THE NEW FILE NAME IS: SEBTALT2.DAT                            ****
  438          ID    **** THE FILE WAS RENAMED AS <<RTBTALT2.DAT>> FDR THE EAST MARICOPA     ****
  439          ID    **** FLOODWAY CAPACITY MITIGATIDN PROJECT, BY FLDDD CONTROL DISTRICT DF ****
  440          ID    **** MARICDPA CDUNTY.                                              ****
1                                        HEC-1 INPUT                                    PAGE  9

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

  441          ID    **** THE FILE WAS RENAMED <<RTBTALT3.DAT>> AND UPDATED USING GREEN AND  ****
  442          ID    **** AMPT FUTURE CONDITIONS FDR BASINS 258 TO 268.                 ****
  443          ID    ************************************************************************
  444          ID
  445          ID
  446          ID
  447          ID     THIS MODEL WAS DRIGINALLY MIDDOUT.DAT
  448          ID     IT HAS BEEN MODIFIED BY CPE (7/2000)
  449          ID     FOR ALTERNATIVE 2 FDR THE EAST MARICDPA FLOOWAY
  450          ID     CAPACITY MITIGATION AND MULTI-USE CORRIDDR STUDY
  451          ID     TO ROUTE BDTH THE POWERLINE FLDDWAY
  452          ID     AND THE SANTAN FREEWAY CHANNEL INTO THE RAY BASIN PRIOR THEIR DUTFALL
  453          ID     INTD THE EMF
  454          ID
  455          ID    ******************************************************************
  456          ID
  457          ID          Model files changed by Collins/Pina Engineering
  458          ID          to reflect multi-use design concepts (recreation
  459          ID          and environment) proposed throughout the entire
  460          ID          EMF Corridor.    July 2000
  461          ID
  462          ID
  463          ID     VERSIDN 8.06  CPE 7/31/00
  464          ID
  465          ID  ************************************************************************
  466          ID
  467          ID
  468          ID  ************************************************************************
  469          ID   FILENAME: MIDDOUT.DAT
  470          ID
  471          ID   ALL CIP INFRASTRUCTURE IS IN PLACE, FUTURE CDNDITIONS LANDUSE IS IN PLACE
```

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 472          ID   FLDW IS RDUTED UP ELLSWDRTH RDAD IN A EARTH LINED CHANNEL
 473          ID
 474          ID  ************************************************************************
 475          ID   PRDDUCED BY DIBBLE AND ASSDCIATES AND HDSKIN ENGINEERING CDNSULTANTS.
 476          ID   File Name: Final8.Dat
 477          ID   Revised - Jan. 2000 by SZ (Wood/Patel) From Final7.dat - new Z-V & Sideweir
 478          ID   Revised - Jan. 2000 by SZ (Wood/Patel) from Final6.dat - 60% review comments
 479          ID   Revised - Dec. 1999 by SZ (Wood/Patel) from Final5.dat
 480          ID   Revised - Dec. 1999 by SZ (Wood/Patel) from Final4.dat
 481          ID   Revised - Nov. 1999 by SZ (Wood/Patel) from Final3.dat
 482          ID   Revised - June 1999 by SZ (Wood/Patel) for Final Model from Dpt1.dat.
 483          ID   Revised - May 1999 by SZ (Wood/Patel) for Option 1, Based on Model SDIB.DAT
 484          ID   REVISED - MAY, 1999 BY VAS TD INCDRPDRATE INCREASE DF SUBBASIN RETENTIDN AND
 485          ID              REVISIDNS TD THE REGIDNAL DETENTIDN BASIN STDRAGE
 486          ID   REVISED - FEB, 1999 BY VALERIE SWICK, FCD DF MARICDPA CDUNTY
 487          ID   REVISED - MAY, 1998 BY D&A
 488          ID
 489          ID   REVISED BY VALERIE SWICK, FEB. 26, 1998
 490          ID
 491          ID   FLDWS FRDM DETENTIDN BASIN LDCATED AT NE CDRNER DF ELLIDT AND ELLSWDRTH RDADS
 492          ID   IS RDUTED TD THE SDUTHWEST BY SIPHDN DRAW TD SUBBASIN 70A. FROM THERE THEY
 493          ID   WILL BE RDUTED BY A CHANNEL TD THE EMF. FLDWS FRDM SUBBASINS ADJACENT TD
 494          ID   SANTAN FREEWAY ALIGNMENT WILL BE RDUTED SDUTH TD SUBBASIN 70A WHERE THEY WILL
 495          ID   BE COMBINED WITH FLDW IN SIPHDN DRAW.
1                                        HEC-1 INPUT                                    PAGE 10

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

 496          ID
 497          ID   EAST MESA AREA DRAINAGE MASTER PLAN
 498          ID   AREA SDUTH DF SUPERSTITIDN (U.S. HWY 60)
 499          ID   AUGUST 1997
 500          ID   SDUTHEAST MESA HIGH RESDLUTIDN MDDEL
 501          ID
 502          ID   **********FUTURE CDNDITIDN MDDEL DF THE WATERSHED**********************
 503          ID
 504          ID  ***********ATTENTIDN************************************************************
 505          ID    SUBBASINS 75, 79A, 79B, 78E,  LANDUSES WERE NDT
 506          ID    CHANGED BECAUSE IT WAS FELT THAT THEIR FUTURE CDNDITIDNS LANDUSES WDULD BE
 507          ID    SIMILAR TD THE EXISTING CDNDITIDNS LANDUSES.
 508          ID    RETENTIDN VDLUMES WILL ALSD NDT BE UTILIZED FDR SUBBASINS 75, 79A, 79B, 78E
 509          ID    SDME QUEEN CREEK SUBBASINS WILL ALSD NDT HAVE RETENTIDN VDLUMES, EITHER
 510          ID    BECAUSE THEY LIE IN PINAL CDUNTY AND WE DDNT KNDW PINAL CDUNTIES PLANS DR
 511          ID    THEY LIE IN THE SANTAN MOUNTAINS AND WDN'T GET DEVELDPED
 512          ID    WILLIAMS GATEWAY AIRPDRT (SUBBASINS 80A, 80B, 81A, AND 81B) ARE MODELED AS
 513          ID    FUTURE CDNDITIDNS AND HAVE RETENTIDN VDLUMES FDR THE 100YR 2HR STDRM
 514          ID  ************************************************************************
 515          ID   FILENAME:  SDIBB.DAT
 516          ID
 517          ID   THIS MDDEL REPRESENTS THE FUTURE CDNDITIDN DF THE WATERSHED.
 518          ID   TDTAL DRAINAGE AREA IS APPRDXIMATELY 213 SQ. MI.
 519          ID   THIS MDDEL USES A Kn VALUE DF 0.09 FDR DESERT LAND USE DUE TD SHEET FLDW
 520          ID   CDNDITIDNS.
 521          ID
 522          ID   100-YEAR 24-HDUR FREQUENCY
 523          ID   AREAL REDUCTIDNS FRDM FCD HYDRDLDGY MANUAL
 524          ID   THIS MODEL INCLUDES INFLDW FRDM NDRTH DF THE SUPERSTITIDN FREEWAY
 525          ID   AND EAST DF THE CAP
 526          ID
 527          ID   DATA FRDM THE QUEEN CREEK ADMS HAS BEEN ADDED TD CALCULATE FLOWS INTD THE
 528          ID   EMF.   MUSKINGUM RDUTING NSTEPS WERE ADJUSTED TD BE WITHIN THE SUGGESTED
 529          ID   RANGE.
 530          ID
 531          ID   METHDDDLOGY
 532          ID   THE US CDRPS DF ENGINEERS FLDDD HYDRDLDGY MDDEL HEC-1 DATED SEP1990 VER 4.0
 533          ID   SCS TYPE II RAINFALL DISTRIBUTIDN
 534          ID   S-GRAPH HYDRDGRAPH
 535          ID   GREEN AND AMPT INFILTRATIDN EQUATIDN USED FDR CALCULATING LDSSES
 536          ID   NDRMAL DEPTH STDRAGE CHANNEL RDUTING
 537          ID   APPRDXIMATE DIRECTIDN, LOCATIDN, AND LENGTH DF THE WASHES HAVE BEEN
 538          ID   EVALUATED BASED DN FIELD INVESTIGATIDN, USGS MAPS, LANDIS AERIAL SURVEYS
 539          ID   DATED 1994
 540          ID   THE NDAA TECHNICAL MEMDRANDUM NDAA ATLAS 2 DEPTH AREA RATIDS
 541          ID
 542          ID   DRIGINAL STUDY PERFDRMED BY LISA C. YDUNG AND AFSHIN AHDURAIYAN, UPDATED BY
 543          ID   DAVID DEGERNESS (DCT-DEC, 1996). REVIEWED BY VALERIE A. SWICK
 544          ID   AND AMIR MDTAMEDI DF THE FLDDD CDNTRDL DISTRICT
 545          ID   HYDRDLDGY BRANCH ENGINEERING DIVISIDN, FLOOD CDNTRDL
 546          ID   DISTRICT DF MARICDPA CDUNTY, DECEMBER - JULY 1995.
 547          ID
 548          ID   ASSUMED VELDCITY DF 1 FT/SEC FDR SHEET FLDW, 2-3 FT/SEC FDR WASH/NATURAL
 549          ID   CHANNEL, 3 FT/SEC FDR RDAD AND GRASS CHANNEL, 10FT/SEC FDR CDNCRETE CHANNEL
 550          ID
1                                        HEC-1 INPUT                                    PAGE 11

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

 551          ID   VELDCITIES FDR ADMP IMPRDVEMENT CHANNELS FROM DIBBLE AND ASSOCIATES
 552          ID   SUGGESTED ALTERNATIVES (JULY 1, 1997)
 553          ID
 554          ID   ************************************************************************
 555          ID   **** THE FDLLDWING NDTE WAS ADDED BY PRIMATECH ENGINEERS DN 06-12-2001 ****
 556          ID   ************************************************************************
 557          ID   NDTE: MUST USE NEBUILD.DSS AS THE DSS FILE TD IMPDRT FLDWS ACRDSS THE
 558          ID         SUPERSTITIDN FREEWAY.
 559          ID   ************************************************************************
 560          ID
 561          ID
 562          ID   NDTE: MUST USE NDIBF.DSS AS THE DSS FILE TD IMPDRT FLDWS ACRDSS THE
 563          ID         SUPERSTITIDN FREEWAY.
 564          ID
 565          ID   DDM MCUHP2 SE MESA ADMP - SDUTH DF SUPERSTITIDN FWY, FUTURE CDNDITIDNS
              *DIAGRAM
 566          IT       5  1APR97    0000     600
 567          ID       5
 568          IN      15
 569          JD    3.60    0.01
 570          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 571          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 572          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
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 573          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
 574          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
 575          PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
 576          PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
 577          PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
 578          PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
 579          PC    .983    .986    .989    .992    .995    .998   1.000
 580          JD   3.58     1.0
 581          JO   3.49     5.0
 582          JD   3.38    10.0
 583          JD   3.24    30.0
 584          JD   3.10    60.0
 585          JO   3.05    90.0
 586          JO   3.00   120.0
 587          JD   2.97   150.0
              * ************************************************************************
              *
              *

 588          KK     73A
 589          KM    BASIN 73A
 590          KM     THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 591          KM     L=      2.3  Lca=      1.0    S=   34.9  Kn= .093  LAG=  94.5
 592          KM     PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 593          BA      .95
 594          LG      .35     .36    5.00     .27     .00
 595          UI     34.     34.     34.     34.     84.    117.    134.    158.    171.    185.
 596          UI    197.    214.    232.    254.    274.    317.    381.    429.    424.    369.
 597          UI    332.    303.    282.    263.    240.    220.    202.    185.    169.    157.
 598          UI    134.    107.     90.     60.     60.     57.     55.     54.     34.     34.
 599          UI     34.     34.     16.     10.     10.     10.     10.     10.     10.     10.
 600          UI     10.     10.     10.     10.     10.     10.      0.      0.      0.      0.
1                                          HEC-1 INPUT                                          PAGE 12

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

 601          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
              *

 602          KK   73ATB   ROUTE
 603          KM   ROUTE FLOW FROM BASIN 73A THROUGH THE MOUNTAIN HEIGHTS OEVELOPEMENT FROM
 604          KM   MERIOIAN ROAD TO MOUNTAIN ROAD.
 605          RS      2    FLOW      -1
 606          RC  0.045   0.040   0.045    2830  0.0050    0.00
 607          RX   0.00    5.00   10.00   20.00  120.00  130.00  135.00  140.00
 608          RY   4.00    3.00    2.50    0.00    0.00    2.50    3.00    4.00
              *
              *

 609          KK    73B   BASIN
 610          KM   BASIN 73B
 611          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 612          KM    L=0.56  Lca=0.28  S=30.4  Kn=0.040  LAG=14.9
 613          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 614          BA  0.425
 615          LG   0.25    0.25    5.40    0.27      30
 616          UI    169     530     973     829     481     180      73      30       0       0
 617          UI      0       0       0       0       0       0       0       0       0       0
              *
              *

 618          KK  RET73B  OIVERT
 619          KM   RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
 620          OT  73BRET   39.41     0.0
 621          OI       0   10000
 622          OQ       0   10000
              *
              *

 623          KK   CP73B COMBINE
 624          KM   COMBINE HYOROGRAPHS 73ATB ANO BASIN 73B
 625          HC       2
              *
              *

 626          KK   73BTC   ROUTE
 627          KM   ROUTE FLOW THROUGH THE NOVA VISTA OEVELOPEMENT FROM MOUNTAIN ROAD TO
 628          KM   SIGNAL BUTTE ROAD.
 629          RS       4    FLOW      -1
 630          RC   0.045   0.040   0.045    4500  0.0050    0.00
 631          RX    0.00    5.00   10.00   22.00  122.00  134.00  139.00  144.00
 632          RY    4.00    3.50    3.00    0.00    0.00    3.00    3.50    4.00
              *
              *
1                                          HEC-1 INPUT                                          PAGE 13

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

 633          KK     73C   BASIN
 634          KM   BASIN 73C
 635          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 636          KM    L=1.33  Lca=0.30  S=22.6  Kn=0.040  LAG=22.5
 637          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 638          BA  0.585
 639          LG   0.25    0.25    5.40    0.27      30
 640          UI     88     344     512     764    1019     695     488     287     149      88
 641          UI     31      27      26       0       0       0       0       0       0       0
 642          UI      0       0       0       0       0       0       0       0       0       0
              *
              *

 643          KK  RET73C  OIVERT
 644          KM   RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
 645          OT  73CRET   37.21     0.0
 646          OI       0   10000
 647          OQ       0   10000
              *
              *
```

```
KK   CP73C COMBINE
KM   COMBINE HYDROGRAPHS 73BTC AND BASIN 73C
HC       2
*
*

KK  73T74C   ROUTE
KM   ROUTE FLOW SOUTH ALONG THE WEST SIOE OF SIGNAL BUTTE ROAD IN AN
KM   ENGINEEREO CHANNEL FROM WARNER ROAD TO THE POWERLINE FLOODWAY.
RS      20    FLOW      -1
RC   0.032   0.032   0.032    4670   .0024
RX       0       5      10      31      69    79.5    84.5    89.5
RY     3.5     3.5     3.5       0       0     3.5     3.5     3.5
*
* ********************************************************************************
*

KK     74A
KM   BASIN 74A
KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
KM    L=      2.4  Lca=      1.0   S=   42.2  Kn= .095  LAG=  92.9
KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
* KO     2       2
BA     .75
LG     .35     .36    5.00     .27     .00
UI     27.     27.     27.     27.     73.     96.    111.    129.    140.    151.
UI    163.    175.    193.    208.    228.    268.    317.    362.    327.    287.
UI    260.    239.    222.    206.    187.    171.    160.    142.    132.    118.
UI     99.     79.     56.     48.     47.     45.     45.     32.     27.     27.
UI     27.     19.      8.      8.      8.      8.      8.      8.      8.      8.
UI      8.      8.      8.      8.      8.      0.      0.      0.      0.      0.
UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
*
*
```

1 HEC-1 INPUT PAGE 14

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

KK   74ATB   ROUTE
KM   ROUTE FLOW FROM BASIN 74A VIA THE POWERLINE FLOOOWAY FROM MERIDIAN ROAD TO
KM   MOUNTAIN ROAD. FLOW ENTERS THE POWERLINE FLOODWAY VIA A 75FT WEIR ON THE
KM   NORTHWEST CORNER OF THE MERIOIAN ROAD AND POWERLINE FLOODWAY INTERSECTION.
RS      1    FLOW      -1
RC   0.013   0.013   0.013    3200  0.0060    0.00
RX    0.00    7.00   21.50   30.00   36.00   44.50   59.00   66.00
RY    6.00    5.50    5.50    0.00    0.00    5.50    5.50    6.00
*
*

KK     74B   BASIN
KM   BASIN 74B
KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
KM    L=1.31  Lca=0.41  S=23.7  Kn=0.040  LAG=24.9
KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
BA   0.333
LG    0.25    0.25    5.80    0.22      30
UI      45     154     245     330     528     430     318     229     122      76
UI      44      18      14      14       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*
*

KK  RET74B  OIVERT
KM   RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
DT  74BRET   17.75     0.0
OI       0   10000
DQ       0   10000
*
*

KK   CP74B COMBINE
KM   COMBINE HYDROGRAPHS 74ATB AND BASIN 74B
HC       2
*
*

KK   74BTC   ROUTE
KM   ROUTE FLOW VIA THE POWERLINE FLOOOWAY FROM MOUNTAIN ROAD TO SIGNAL BUTTE
KM   ROAD.
RS       1    FLOW      -1
RC   0.013   0.013   0.013    3100  0.0055    0.00
RX    0.00    7.00   21.50   30.00   36.00   44.50   59.00   66.00
RY    6.00    5.50    5.50    0.00    0.00    5.50    5.50    6.00
*
*

KK     74C   BASIN
KM   BASIN 74C
KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
KM    L=1.22  Lca=0.40  S=25.4  Kn=0.040  LAG=23.7
KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
BA   0.345
```

1 HEC-1 INPUT PAGE 15

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

LG    0.25    0.17    6.80    0.15      30
UI      48     180     276     386     588     428     310     211      97      65
UI      35      15      15      16       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*
*

KK  RET74C  DIVERT
KM   RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
OT  74CRET    23.7     0.0
OI       0   10000
OQ       0   10000
```

```
                *
                *
 720            KK   CP74C COMBINE
 721            KM   COMBINE HYDROGRAPHS 73T74C, 74BTC, ANO BASIN 74C
                * KO     2
 722            HC       3
                *
                *
 723            KK  74CT75
 724            KM   ROUTE FLOW FROM IN THE POWERLINE FLOOOWAY FROM CP74C TO CP75
 725            KM   THE NSTEP FOR THIS ROUTING WOULD NOT CONVERGE ON A VALUE AS
 726            KM   IT OSCILLATED BETWEEN 3 ANO 20. THE ASSUMPTION WAS MADE OF
 727            KM   5 FEET PER SEC ACROSS THE ROUTING WHICH GIVES AN NSTEP OF 7.
 728            RS       7    FLOW      -1
 729            RC   0.030   0.013   0.030   10500   .0038
 730            RX       0      15    16.5      25      33    41.5      43      58
 731            RY     6.6     6.6     5.6       0       0     5.6     6.6     6.6
                *
                *
                * ******************************************************************************

 732            KK    10   BASIN
 733            KM    BASIN 10
 734            KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 735            KM    L=1.11  Lca=0.56  S=18.9  Kn=0.045  LAG=30.9
 736            KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 737            BA   0.171
 738            LG    0.25    0.19    6.54    0.17      31
 739            UI       0      19      45      87     111     143     216     198     151     117
 740            UI      88      52      32      23      16       6       6       6       6       0
 741            UI       0       0       0       0       0       0       0       0       0       0
 742            UI       0       0       0       0       0       0       0       0       0       0
 743            UI       0       0       0       0       0       0       0       0       0       0
                *
                *
1                                          HEC-1 INPUT                                          PAGE 16

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

 744            KK   RET10  DIVERT
 745            KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
 746            OT   10RET   18.32     0.0
 747            DI       0   10000
 748            OQ       0   10000
                *
                *
 749            KK   10T75
 750            KM   ROUTE FLOW FROM NORTH SIOE RAY FROM RET10 TO CP75 WITHIN RAY ROAD
 751            RS       1    FLOW      -1
 752            RC   0.030   0.015   0.030    6320    .0060
 753            RX       0    17.5      18      57      73     112   112.5     130
 754            RY     1.0    0.50     0.0     0.8     0.8     0.0     0.5     1.0
                *
                *
 755            KK     02B   BASIN
 756            KM    BASIN 02B
 757            KM    THE FOLLOWING PARAMETERS WERE PROVIDEO FOR THIS BASIN
 758            KM    L=1.02  Lca=0.26  S=18.6  Kn=0.040  LAG=20.0
 759            KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 760            BA   0.225
 761            LG    0.25    0.25    5.46    0.30      56
 762            UI       0      45     164     249     413     354     239     142      64      37
 763            UI      12      12       0       0       0       0       0       0       0       0
 764            UI       0       0       0       0       0       0       0       0       0       0
 765            UI       0       0       0       0       0       0       0       0       0       0
 766            UI       0       0       0       0       0       0       0       0       0       0
                *
                *
 767            KK  RET02B  DIVERT
 768            KM  RETAIN 100 YR 2 HR RUNOFF VOLUME
 769            DT  02BRET   23.65       0
 770            DI       0   10000
 771            DQ       0   10000
                *
                *
 772            KK    2BT2   ROUTE
 773            KM   ROUTE FLOW IN EXCESS OF THE 100-YEAR, 2-HR STORM OVERLAND TO
 774            KM   DRAINAGE CORRIDOR ALONG SUBBASIN 1 AND SUBBASIN 5A BOUNDARY
 775            RS      12    FLOW      -1
 776            RC   0.032   0.032   0.032     990  0.0031
 777            RX    0.00       1       2       3    2003    2004    2005    2006
 778            RY    1.00    0.75    0.50    0.00    0.00    0.50    0.75    1.00
                *
                *
1                                          HEC-1 INPUT                                          PAGE 17

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

 779            KK     02C   BASIN
 780            KM    BASIN 02C
 781            KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 782            KM    L=1.13  Lca=0.42  S=19.5  Kn=0.042  LAG=25.9
 783            KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 784            BA   0.238
 785            LG    0.25    0.25    5.71    0.27      47
 786            UI       0      31      99     164     218     340     323     236     172     112
 787            UI      53      39      22       9       9       9       0       0       0       0
 788            UI       0       0       0       0       0       0       0       0       0       0
 789            UI       0       0       0       0       0       0       0       0       0       0
 790            UI       0       0       0       0       0       0       0       0       0       0
                *
                *
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 791          KK  RET02C  OIVERT
 792          KM   RETAIN 100 YR 24 HR RUNOFF VOLUME
 793          KM   THE REQUIREO RETENTION FOR THE 100-YEAR, 24-HOUR STORM EVENT WAS PROVIOEO
 794          KM   BY THE ENGINEER OF THE ENO USER OF THE SITE BASEO UPON KNOWN INFILTRATION ANO
 795          KM   THE PROPOSEO SITE PLAN.
 796          OT  02CRET   29.50       0
 797          OI       0   10000
 798          OQ       0   10000
              *
              *

 799          KK     CP2
 800          KM    COMBINE HYOROGRAPHS 2BT2 ANO RET02C
 801          HC       2
              *
              *

 802          KK    2T1   ROUTE
 803          KM   ROUTE FLOW FROM CP2 TO CP1 WITHIN ORAINAGE CORRIOOR
 804          RS       7    FLOW      -1
 805          RC   0.035   0.035   0.035    3031  0.0040
 806          RX    0.00       2       4       8      42      46      48      50
 807          RY    2.00    1.50    1.00    0.00    0.00    1.00    1.50    2.00
              *
              *

 808          KK     01   BASIN
 809          KM    BASIN 01
 810          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 811          KM    L=0.98  Lca=0.26  S=19.4  Kn=0.040  LAG=19.5
 812          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 813          BA   0.299
 814          LG    0.25    0.15    7.58    0.12      56
 815          UI       0      64     229     347     577     461     307     167      81      42
 816          UI      16      16       0       0       0       0       0       0       0       0
 817          UI       0       0       0       0       0       0       0       0       0       0
 818          UI       0       0       0       0       0       0       0       0       0       0
 819          UI       0       0       0       0       0       0       0       0       0       0
              *
              *
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1 HEC-1 INPUT PAGE 18

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

 820          KK  RET01  OIVERT
 821          KM   RETAIN 100 YR 24 HR RUNOFF VOLUME
 822          OT  01RET    50.43     0.0
 823          OI       0   10000
 824          OQ       0   10000
              *
              *

 825          KK     05A   BASIN
 826          KM    BASIN 05A
 827          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 828          KM    L=0.91  Lca=0.39  S=13.2  Kn=0.042  LAG=25.0
 829          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 830          BA   0.188
 831          LG    0.25    0.15    7.94    0.11      34
 832          UI       0      25      85     138     186     293     245     180     130      71
 833          UI      43      26      11       8       8       0       0       0       0       0
 834          UI       0       0       0       0       0       0       0       0       0       0
 835          UI       0       0       0       0       0       0       0       0       0       0
 836          UI       0       0       0       0       0       0       0       0       0       0
              *
              *

 837          KK  RET05A  OIVERT
 838          KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
 839          OT  05ARET   15.68     0.0
 840          OI       0   10000
 841          OQ       0   10000
              *
              *

 842          KK     06A   BASIN
 843          KM    BASIN 06A
 844          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 845          KM    L=0.68  Lca=0.22  S=25.0  Kn=0.045  LAG=17.1
 846          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 847          BA   0.124
 848          LG    0.27    0.25    5.85    0.23      25
 849          UI       0      36     120     195     269     170      96      39      18       7
 850          UI       7       0       0       0       0       0       0       0       0       0
 851          UI       0       0       0       0       0       0       0       0       0       0
 852          UI       0       0       0       0       0       0       0       0       0       0
 853          UI       0       0       0       0       0       0       0       0       0       0
              *
              *

 854          KK  RET06A  OIVERT
 855          KM  RETAIN 100 YR 2 HR RUNOFF VOLUME
 856          OT  02BRET   10.28       0
 857          OI       0   10000
 858          OQ       0   10000
              *
              *
```

1 HEC-1 INPUT PAGE 19

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

 859          KK    6AT1   ROUTE
 860          KM   ROUTE FLOW IN EXCESS OF THE 100-YEAR, 2-HR STORM ALONG THE EVERTON
 861          KM   TERRACE ROADWAY TO THE ORAINAGE CORRIOOR ALONG THE BOUNOARY BETWEEN
 862          KM   SUBBASIN 1 ANO SUBBASIN 5A
 863          RS      15    FLOW      -1
 864          RC   0.030   0.015   0.030    3600  0.0011
```

```
 865          RX    0.00      17      23     28.5     46.5     65.5       71       84
 866          RY    1.07    0.90    0.90     0.00     1.15     0.00     0.90     1.78
                    *
                    *

 867          KK     CP1
 868          KM    COMBINE HYOROGRAPHS 2T1, RET01, RET05A, ANO 6AT1.
 869          HC       4
                    *
                    *

 870          KK     1T3   ROUTE
 871          KM  ROUTE FLOW FROM CP 1 TO CP 3 WITHIN ORAINAGE CORRIOOR.
 872          RS       4    FLOW      -1
 873          RC   0.035   0.035   0.035    2548  0.0051
 874          RX    0.00       2       4       8      42       46       48       50
 875          RY    2.00    1.50    1.00    0.00    0.00     1.00     1.50     2.00
                    *
                    *

 876          KK      03   BASIN
 877          KM    BASIN 03
 878          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 879          KM    L=1.03  Lca=0.23  S=19.4  Kn=0.040  LAG=19.0
 880          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 881          BA   0.254
 882          LG    0.25    0.15    8.85    0.07      55
 883          UI       0      58     203     311     511      383      252      124       64       29
 884          UI      14      14       0       0       0        0        0        0        0        0
 885          UI       0       0       0       0       0        0        0        0        0        0
 886          UI       0       0       0       0       0        0        0        0        0        0
 887          UI       0       0       0       0       0        0        0        0        0        0
                    *
                    *

 888          KK   RET03  OIVERT
 889          KM   RETAIN 100 YR 24 HR RUNOFF VOLUME
 890          OT   03RET   42.38     0.0
 891          OI       0   10000
 892          OQ       0   10000
                    *
                    *
```



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

 893          KK     CP3
 894          KM    COMBINE HYOROGRAPHS 1T3 ANO RET03.
 895          HC       2
                    *
                    *

 896          KK    3T7A   ROUTE
 897          KM   ROUTE FLOW FROM CP3 TO CP7.
 898          RS       3    FLOW      -1
 899          RC   0.035   0.035   0.035    4450   .0055
 900          RX       0    50.0    95.0   125.0   150.0    280.0    440.0    620.0
 901          RY     3.0     2.0     1.0     0.0     0.0      1.0      2.0      3.0
                    *
                    *

 902          KK      5B   BASIN
 903          KM    BASIN 5B
 904          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 905          KM    L=0.65  Lca=0.12  S=21.5  Kn=0.045  LAG=13.7
 906          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 907          BA   0.156
 908          LG    0.25    0.15    8.85    0.07      29
 909          UI       0      75     226     408     284      135       51       15       12        0
 910          UI       0       0       0       0       0        0        0        0        0        0
 911          UI       0       0       0       0       0        0        0        0        0        0
 912          UI       0       0       0       0       0        0        0        0        0        0
 913          UI       0       0       0       0       0        0        0        0        0        0
                    *
                    *

 914          KK  RET05B  OIVERT
 915          KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
 916          OT  05BRET   11.86     0.0
 917          OI       0   10000
 918          OQ       0   10000
                    *
                    *

 919          KK   5BT7A   ROUTE
 920          KM   ROUTE FLOW FROM RET 05B TO CP 7.
 921          RS       1    FLOW      -1
 922          RC   0.030   0.015   0.030    1093   .0040
 923          RX       0    17.5    18.0    57.0    73.0    112.0    112.5    130.0
 924          RY     1.0     0.5     0.0     0.8     0.8      0.0      0.5      1.0
                    *
                    *

 925          KK     07B   BASIN
 926          KM    BASIN 07B
 927          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
 928          KM    L=0.67  Lca=0.26  S=20.9  Kn=0.045  LAG=18.7
 929          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
 930          BA   0.100
 931          LG    0.25    0.15    8.36    0.09      28
```



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

 932          UI       0      24      82     126     206      149       97       45       24       10
 933          UI       6       6       0       0       0        0        0        0        0        0
 934          UI       0       0       0       0       0        0        0        0        0        0
 935          UI       0       0       0       0       0        0        0        0        0        0
 936          UI       0       0       0       0       0        0        0        0        0        0
```

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                 *
                 *

937              KK  RET07B  OIVERT
938              KM   RETAIN 100 YR 24 HR RUNOFF VOLUME
939              OT  07BRET   12.14      0.0
940              OI       0   10000
941              OQ       0   10000
                 *
                 *

942              KK   7BT7A   ROUTE
943              KM   ROUTE FLOW FROM RET 07B TO CP 7A.
944              RS       1    FLOW       -1
945              RC   0.030   0.015   0.030    1154   .0026
946              RX       0     7.5     8.0    38.0    43.0    73.0    73.5    81.0
947              RY     0.8     0.5     0.0     0.6     0.6     0.0     0.5     0.8
                 *
                 *

948              KK     CP7A
949              KM     COMBINE HYOROGRAPHS 3T7A, 5BT7A, ANO 7BT7A.
950              HC       3
                 *
                 *

951              KK   7AT12   ROUTE
952              KM   ROUTE FLOW FROM CP 7A TO CP 12.
953              RS       3    FLOW       -1
954              RC   0.030   0.015   0.030    2387   .0051
955              RX       0    17.5    18.0    57.0    73.0   112.0   112.5   130.0
956              RY     1.0     0.5     0.0     0.8     0.8     0.0     0.5     1.0
                 *
                 *

957              KK      12   BASIN
958              KM     BASIN 07B
959              KM     THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
960              KM     L=0.64  Lca=0.19  S=21.9  Kn=0.044  LAG=15.8
961              KM     PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
962              BA   0.127
963              LG    0.25    0.15    7.00    0.15      34
964              UI       0      45     141     251     265     158      69      33      10       8
965              UI       0       0       0       0       0       0       0       0       0       0
966              UI       0       0       0       0       0       0       0       0       0       0
967              UI       0       0       0       0       0       0       0       0       0       0
968              UI       0       0       0       0       0       0       0       0       0       0
                 *
                 *
1                                       HEC-1 INPUT                                              PAGE 22

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


969              KK  RET12  OIVERT
970              KM  RETAIN 100 YR 2 HR RUNOFF VOLUME
971              OT  12RET    9.95     0.0
972              OI       0   10000
973              OQ       0   10000
                 *
                 *

974              KK      75   BASIN
975              KM     BASIN 75
976              KM     THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
977              KM     L=1.30  Lca=0.68  S=20.0  Kn=0.060  LAG=46.7
978              KM     PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
979              BA   0.507             .20
980              LG    0.10    0.15    8.85    0.08       3
981              UI       0      37      37     112     160     194     225     266     328     450
982              UI     416     337     289     242     205     170     121      73      62      54
983              UI      37      34      11      11      11      11      11      11       0       0
984              UI       0       0       0       0       0       0       0       0       0       0
985              UI       0       0       0       0       0       0       0       0       0       0
                 *
                 *

986              KK     CP12
987              KM     COMBINE HYOROGRAPHS 1T3 AND RET03.
988              HC       3
                 *
                 *

989              KK   12T13   ROUTE
990              KM   ROUTE FLOW FROM CP 12 TO CP 13.
991              RS       3    FLOW       -1
992              RC   0.030   0.015   0.030    2600   .0014
993              RX       0    17.5    18.0    57.0    73.0   112.0   112.5   130.0
994              RY     2.0     1.0     0.5     0.0     0.0     0.5     1.0     2.0
                 *
                 *

995              KK      08   BASIN
996              KM     BASIN 08
997              KM     THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
998              KM     L=1.51  Lca=0.82  S=19.2  Kn=0.042  LAG=37.4
999              KM     PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1000             BA   0.644
1001             LG    0.25    0.25    6.00    0.22      36
1002             UI       0      58      95     228     302     364     450     638     686     525
1003             UI     433     347     278     187     102      95      58      47      18      18
1004             UI      18      18      18       0       0       0       0       0       0       0
1005             UI       0       0       0       0       0       0       0       0       0       0
1006             UI       0       0       0       0       0       0       0       0       0       0
                 *
                 *
1                                       HEC-1 INPUT                                              PAGE 23

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
1007          KK   RET08  DIVERT
1008          KM   RETAIN 100 YR 2 HR RUNOFF VDLUME
1009          DT   08RET    48.23      0.0
1010          OI        0   10000
1011          OQ        0   10000
              *
              *

1012          KK    8T9B
1013          KM   ROUTE FLDW FRDM BASIN 8 TO BASIN 9B
1014          RS        2    FLOW       -1
1015          RC    0.030    0.015    0.030     1410     .0053
1016          RX        0     17.5       18       57       73      112    112.5      130
1017          RY      1.0     0.50      0.0      0.8      0.8      0.0      0.5      1.0
              *
              *

1018          KK     09B   BASIN
1019          KM    BASIN 09B
1020          KM    THE FOLLOWING PARAMETERS WERE PRDVIDED FDR THIS BASIN
1021          KM    L=0.53  Lca=0.22  S=30.2  Kn=0.042  LAG=14.0
1022          KM    PHOENIX VALLEY S-GRAPH WAS USED FDR THIS BASIN
1023          BA    0.088
1024          LG     0.25     0.25     5.58     0.30       34
1025          UI        0       40      123      224      163       82       30       10        6        0
1026          UI        0        0        0        0        0        0        0        0        0        0
1027          UI        0        0        0        0        0        0        0        0        0        0
1028          UI        0        0        0        0        0        0        0        0        0        0
1029          UI        0        0        0        0        0        0        0        0        0        0
              *
              *

1030          KK  RET09B  OIVERT
1031          KM   RETAIN 100 YR 24 HR RUNDFF VOLUME
1032          DT  09BRET    11.87      0.0
1033          OI        0   10000
1034          DQ        0   10000
              *
              *

1035          KK    CP9B
1036          KM    COMBINE HYDROGRAPHS 8T9B ANO RET9B
1037          HC        2
              *
              *

1038          KK   9BT9A
1039          KM   RDUTE FLDW ALONG POINT TWENTY-TWO AVE FRDM BASIN 9B TO CP9A
1040          RS        1    FLOW       -1
1041          RC    0.030    0.015    0.030     1736     .0040
1042          RX        0     17.5       18       57       73      112    112.5      130
1043          RY      1.0     0.50      0.0      0.8      0.8      0.0      0.5      1.0
              *
              *
```



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

1044          KK     06B   BASIN
1045          KM    BASIN 06B
1046          KM    THE FOLLOWING PARAMETERS WERE PRDVIOEO FOR THIS BASIN
1047          KM    L=0.61  Lca=0.21  S=16.4  Kn=0.043  LAG=16.7
1048          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1049          BA    0.103
1050          LG     0.25     0.15     7.58     0.12       32
1051          UI        0       32      104      174      223      137       72       31       13        6
1052          UI        0        0        0        0        0        0        0        0        0        0
1053          UI        0        0        0        0        0        0        0        0        0        0
1054          UI        0        0        0        0        0        0        0        0        0        0
1055          UI        0        0        0        0        0        0        0        0        0        0
              *
              *

1056          KK  RET06B  DIVERT
1057          KM   RETAIN 100 YR 2 HR RUNDFF VDLUME
1058          DT  06BRET    8.29      0.0
1059          DI        0   10000
1060          DQ        0   10000
              *
              *

1061          KK   6BT9A
1062          KM   RDUTE FLDW ALDNG PDINT TWENTY-TWD AVE FRDM BASIN 6B TO CP9A
1063          RS        3    FLOW       -1
1064          RC    0.030    0.015    0.030     3123     .0048
1065          RX        0     17.5       18       57       73      112    112.5      130
1066          RY      1.0     0.50      0.0      0.8      0.8      0.0      0.5      1.0
              *
              *

1067          KK     09A   BASIN
1068          KM    BASIN 09A
1069          KM    THE FOLLOWING PARAMETERS WERE PRDVIDED FOR THIS BASIN
1070          KM    L=0.83  Lca=0.42  S=20.5  Kn=0.044  LAG=23.9
1071          KM    PHOENIX VALLEY S-GRAPH WAS USED FDR THIS BASIN
1072          BA    0.061
1073          LG     0.23     0.15     7.27     0.16       35
1074          UI        0        9       31       48       67      102       77       55       38       18
1075          UI       12        7        3        3        3        0        0        0        0        0
1076          UI        0        0        0        0        0        0        0        0        0        0
1077          UI        0        0        0        0        0        0        0        0        0        0
1078          UI        0        0        0        0        0        0        0        0        0        0
              *
              *

1079          KK  RET09A  DIVERT
1080          KM   RETAIN 100 YR 24 HR RUNDFF VOLUME
1081          DT  09ARET    8.60      0.0
```

```
1082          OI       0   10000
1083          OQ       0   10000
              *
              *
```



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

1084          KK    CP9A
1085          KM    COMBINE HYOROGRAPHS RET9A, 6BT9A, ANO 9BT9A
1086          HC       3
              *
              *

1087          KK   9AT11
1088          KM   ROUTE FLOW FROM  CP9A TO CP11
1089          RS       1    FLOW      -1
1090          RC   0.030   0.015   0.030     925   .0065
1091          RX       0    17.5    18.0    57.0    73.0   112.0   112.5   130.0
1092          RY     1.0     0.5     0.0     0.8     0.8     0.0     0.5     1.0
              *
              *

1093          KK     11B   BASIN
1094          KM    BASIN 11B
1095          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1096          KM    L=0.92  Lca=0.31  S=27.2  Kn=0.045  LAG=21.5
1097          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1098          BA   0.109
1099          LG    0.26    0.25    4.96    0.38      47
1100          UI       0      17      70     105     163     186     125      85      41      24
1101          UI      13       5       5       0       0       0       0       0       0       0
1102          UI       0       0       0       0       0       0       0       0       0       0
1103          UI       0       0       0       0       0       0       0       0       0       0
1104          UI       0       0       0       0       0       0       0       0       0       0
              *
              *

1105          KK  RET11B  OIVERT
1106          KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
1107          OT  11BRET   11.34     0.0
1108          OI       0   10000
1109          OQ       0   10000
              *
              *

1110          KK    CP11
1111          KM    COMBINE HYOROGRAPHS 9AT11, ANO RET11B.
1112          HC       2
              *
              *

1113          KK   11T13
1114          KM   ROUTE FLOW FROM  CP11 TO CP13
1115          RS       1    FLOW      -1
1116          RC   0.030   0.015   0.030    1765   .0040
1117          RX       0    17.5    18.0    57.0    73.0   112.0   112.5   130.0
1118          RY     1.0     0.5     0.0     0.8     0.8     0.0     0.5     1.0
              *
              *
```



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

1119          KK      13   BASIN
1120          KM    BASIN 13
1121          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1122          KM    L=0.95  Lca=0.54  S=17.9  Kn=0.043  LAG=27.8
1123          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1124          BA   0.285
1125          LG    0.25    0.25    5.05    0.33      36
1126          UI       0      35      98     175     227     323     409     299     226     167
1127          UI      93      58      38      21      11      11      11       0       0       0
1128          UI       0       0       0       0       0       0       0       0       0       0
1129          UI       0       0       0       0       0       0       0       0       0       0
1130          UI       0       0       0       0       0       0       0       0       0       0
              *
              *

1131          KK   RET13  OIVERT
1132          KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
1133          OT   13RET   23.28     0.0
1134          OI       0   10000
1135          OQ       0   10000
              *
              *

1136          KK    CP13
1137          KM    COMBINE HYOROGRAPHS RET13, 11T13, ANO 12T13
1138          HC       3
              *
              *

1139          KK   13T75
1140          KM   ROUTE FLOW ALONG RAY ROAD FROM RET11A TO CP75
1141          RS       1    FLOW      -1
1142          RC   0.030   0.015   0.030    1230   .0016
1143          RX       0    17.5      18      57      73     112   112.5     130
1144          RY     2.0     1.0     0.5     0.0     0.0     0.5     1.0     2.0
              *
              *

1145          KK     11A   BASIN
1146          KM    BASIN 11A
1147          KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1148          KM    L=1.25  Lca=0.52  S=19.2  Kn=0.042  LAG=29.3
1149          KM    PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1150          BA   0.232
```

```
1151          LG    0.26    0.25    4.12    0.60      51
1152          UI       0      27      70     129     167     224     325     253     195     148
1153          UI     102      52      40      27      10       8       8       8       0       0
1154          UI       0       0       0       0       0       0       0       0       0       0
1155          UI       0       0       0       0       0       0       0       0       0       0
1156          UI       0       0       0       0       0       0       0       0       0       0
              *
              *
1                                          HEC-1 INPUT                                          PAGE 27

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

1157          KK  RET11A  DIVERT
1158          KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
1159          OT  11ARET   22.17     0.0
1160          OI       0   .10000
1161          OQ       0   10000
              *
              *

1162          KK  11AT75
1163          KM   ROUTE FLOW ALONG RAY ROAD FROM RET11A TO CP75
1164          RS       3    FLOW      -1
1165          RC   0.030   0.015   0.030    1370   .0051
1166          RX       0    17.5      18      57      73     112   112.5     130
1167          RY     1.0     0.5     0.0     0.8     0.8     0.0     0.5     1.0
              *
              *

1168          KK     14   BASIN
1169          KM    BASIN 14
1170          KM    THE FOLLOWING PARAMETERS WERE PROVIDEO FOR THIS BASIN
1171          KM    L=0.33  Lca=0.07  S=24.2  Kn=0.035  LAG=6.6
1172          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1173          BA   0.078
1174          LG    0.20    0.25    5.34    0.32      80
1175          UI       0     162     350      81       0       0       0       0       0       0
1176          UI       0       0       0       0       0       0       0       0       0       0
1177          UI       0       0       0       0       0       0       0       0       0       0
1178          UI       0       0       0       0       0       0       0       0       0       0
1179          UI       0       0       0       0       0       0       0       0       0       0
              *
              *

1180          KK   RET14  OIVERT
1181          KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
1182          OT   14RET    8.09     0.0
1183          DI       0   10000
1184          OQ       0   10000
              *
              *

1185          KK    CP75
1186          KM    COMBINE HYOROGRAPHS 11AT75, 13T75, RET14, 74CT75, ANO 10T75.
              * KO     2
1187          HC       5
              *
              * ************************************************************************

1188          KK     77A
1189          KM  BASIN 77A
1190          KM  THE FOLLOWING PARAMETERS WERE PROVIOED FOR THIS BASIN
1191          KM  L=2.9  Lca=1.5   S=31.1  Kn=.092  LAG= 119.0
1192          KM  PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1193          BA    1.74
1194          LG     .35     .36    5.00     .27     .00
1                                          HEC-1 INPUT                                          PAGE 28

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

1195          UI     49.     49.     49.     49.     49.    108.    162.    185.    205.    230.
1196          UI    244.    264.    278.    293.    311.    333.    358.    380.    406.    462.
1197          UI    537.    584.    659.    601.    541.    496.    461.    430.    407.    385.
1198          UI    362.    334.    311.    293.    273.    252.    238.    226.    189.    161.
1199          UI    141.    104.     87.     87.     83.     81.     81.     73.     49.     49.
1200          UI     49.     49.     49.     22.     15.     15.     15.     15.     15.     15.
1201          UI     15.     15.     15.     15.     15.     15.     15.     15.     15.     15.
1202          UI     15.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1203          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
              *

1204          KK   77ATB   ROUTE
1205          KM  ROUTE BASIN 77A THROUGH THE KEIGHLEY PLACE SUBDIVISION FROM MERIDIAN ROAD TO
1206          KM  TO MOUNTAIN ROAD.
1207          RS       1    FLOW      -1
1208          RC   0.045   0.040   0.045    3000  0.0050    0.00
1209          RX    0.00    5.00   10.00   37.00   47.00   74.00   79.00   84.00
1210          RY    5.50    5.00    4.50    0.00    0.00    4.50    5.00    5.50
              *
              *

1211          KK     77B   BASIN
1212          KM  BASIN 77B
1213          KM  THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1214          KM  L=0.56  Lca=0.26  S=28.6  Kn=0.047  LAG=17.2
1215          KM  PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1216          BA   0.349
1217          LG    0.19    0.25    5.40    0.30      18
1218          UI     100     337     536     757     486     273     113      54      20      21
1219          UI       0       0       0       0       0       0       0       0       0       0
              *
              *

1220          KK  RET77B  DIVERT
1221          KM  RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
1222          DT  77BRET   16.44     0.0
1223          OI       0   10000
1224          DQ       0   10000
```

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               *
               *
1225           KK   CP77B COMBINE
1226           KM  COMBINE HYOROGRAPHS 77ATB AND 77B.
1227           HC      2
               *
               *
1228           KK   77BTC   ROUTE
1229           KM  ROUTE FLOW THROUGH THE MOUNTAIN HORIZONS (SOUTH) DEVELOPEMENT FROM MOUNTAIN
1230           KM  ROAD TO SIGNAL BUTTE ROAD.
1231           RS      3    FLOW      -1
1232           RC   0.045   0.040   0.045    4750  0.0042    0.00
1233           RX    0.00    5.00   10.00   20.00   85.00  105.00  110.00  115.00
1234           RY    5.00    4.00    3.00    0.00    0.00    3.00    4.00    5.00
               *
               * ***************************************************************************
               *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1235           KK     77C   BASIN
1236           KM  BASIN 77C
1237           KM  THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1238           KM    L=0.76  Lca=0.51  S=23.7  Kn=0.045  LAG=24.8
1239           KM  PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1240           BA   0.279
1241           LG    0.25    0.25    6.00    0.22      31
1242           UI       0      38     129     208     281     442     362     265     189     100
1243           UI      62      38      14      12      12       0       0       0       0       0
1244           UI       0       0       0       0       0       0       0       0       0       0
1245           UI       0       0       0       0       0       0       0       0       0       0
1246           UI       0       0       0       0       0       0       0       0       0       0
               *
               *
1247           KK  RET77C  DIVERT
1248           KM  RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
1249           OT  77CRET    18.8     0.0
1250           DI       0   10000
1251           OQ       0   10000
               *
               *
1252           KK    C77C COMBINE
1253           KM  COMBINE HYDROGRAPHS 77BTC ANO 77C
1254           HC       2
               *
               * ***************************************************************************
               *
1255           KK  77CT78   ROUTE
1256           KM  ROUTE FLOW SOUTH ALONG THE WEST SIOE OF SIGNAL BUTTE ROAD IN AN ENGINEERED
1257           KM  CHANNEL FROM RAY ROAD TO WILLIAMS FIELD ROAD.
1258           RS       4    FLOW      -1
1259           RC   0.032   0.032   0.032    4435  0.0020    0.00
1260           RX    0.00    5.00   10.00   24.00  124.00  138.00  143.00  148.00
1261           RY    4.50    4.00    3.50    0.00    0.00    3.50    4.00    4.50
               *
               *
1262           KK     78A
1263           KM  BASIN 78A
1264           KM  THE FOLLOWING PARAMETERS WERE PROVIOED FOR THIS BASIN
1265           KM  L=3.3  Lca=1.3   S=30.2  Kn=.090  LAG= 118.0
1266           KM  PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1267           BA    1.88
1268           LG     .35     .36    5.00     .27     .00
1269           UI     54.     54.     54.     54.     54.    124.    176.    203.    227.    252.
1270           UI    268.    290.    305.    322.    342.    366.    396.    417.    451.    515.
1271           UI    612.    641.    716.    643.    579.    531.    494.    464.    437.    417.
1272           UI    385.    356.    334.    315.    290.    270.    255.    233.    206.    159.
1273           UI    153.     95.     95.     95.     88.     88.     88.     65.     54.     54.
1274           UI     54.     54.     45.     16.     16.     16.     16.     16.     16.     16.
1275           UI     16.     16.     16.     16.     16.     16.     16.     16.     16.     16.
```


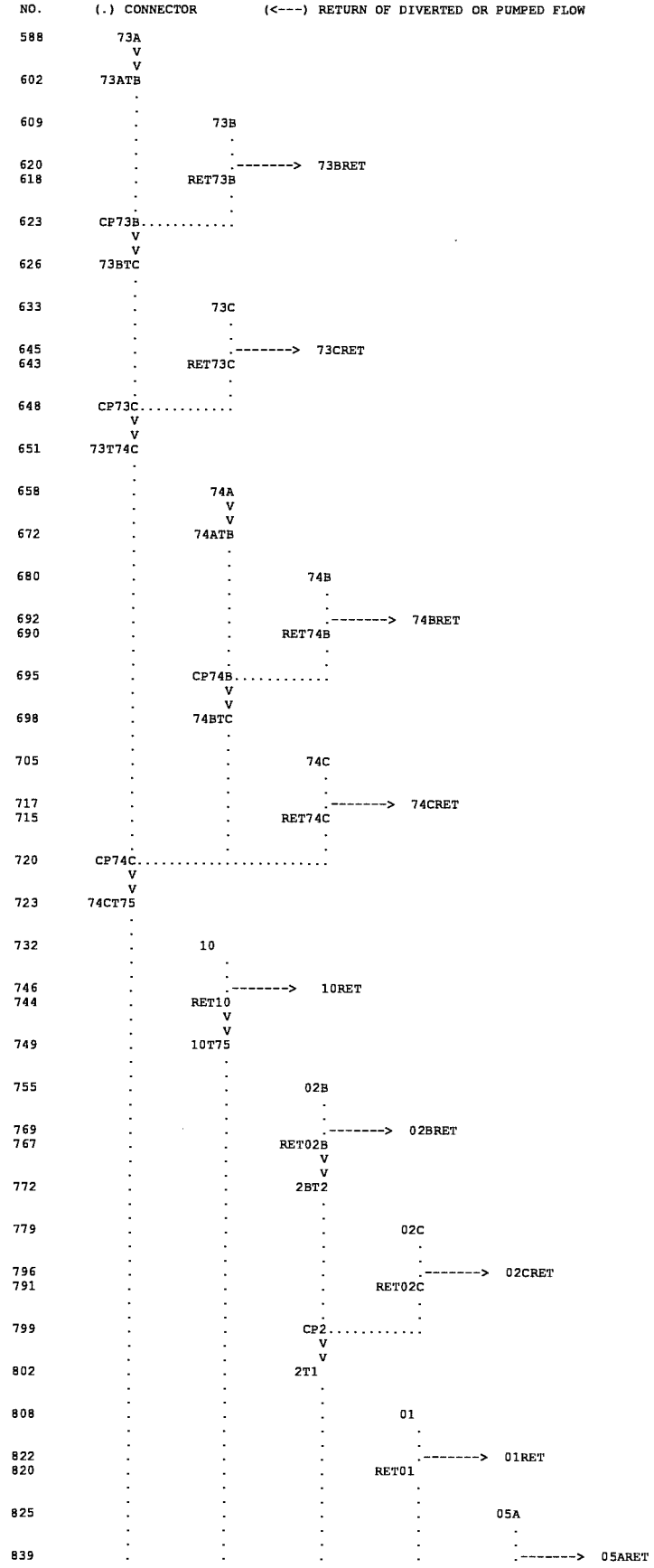

```
LINE           IO.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1276           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1277           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
               *
               *
1278           KK   78ATB   ROUTE
1279           KM  ROUTE FLOW FROM 78A TO 78B VIA WASH CROSSING COUNTY LINE
1280           RS       7    FLOW      -1
1281           RC   0.045   0.040   0.045    3500  0.0042    0.00
1282           RX    0.00  500.00  980.00 1003.00 1007.00 1031.00 1511.00 2011.00
1283           RY    4.50    3.50    3.00    0.00    0.00    3.00    3.50    4.50
               *
               *
1284           KK     78B   BASIN
1285           KM  BASIN 78B
1286           KM  THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1287           KM  L=0.60  Lca=0.40  S=31.7  Kn=0.050  LAG=21.7
1288           KM  PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1289           BA   0.396
1290           LG    0.30    0.17    6.80    0.15      15
1291           UI      61     254     371     576     682     457     315     156      90      48
1292           UI      20      19       0       0       0       0       0       0       0       0
               *
               * CURRENTLY THERE IS NO EXISTING RETENTION OR PLANNED RETENTION FOR BASIN 78B
               * OUE TO THE CURRENT LANO USE OF LARGE LOT RESIOENTIAL.
               *
```

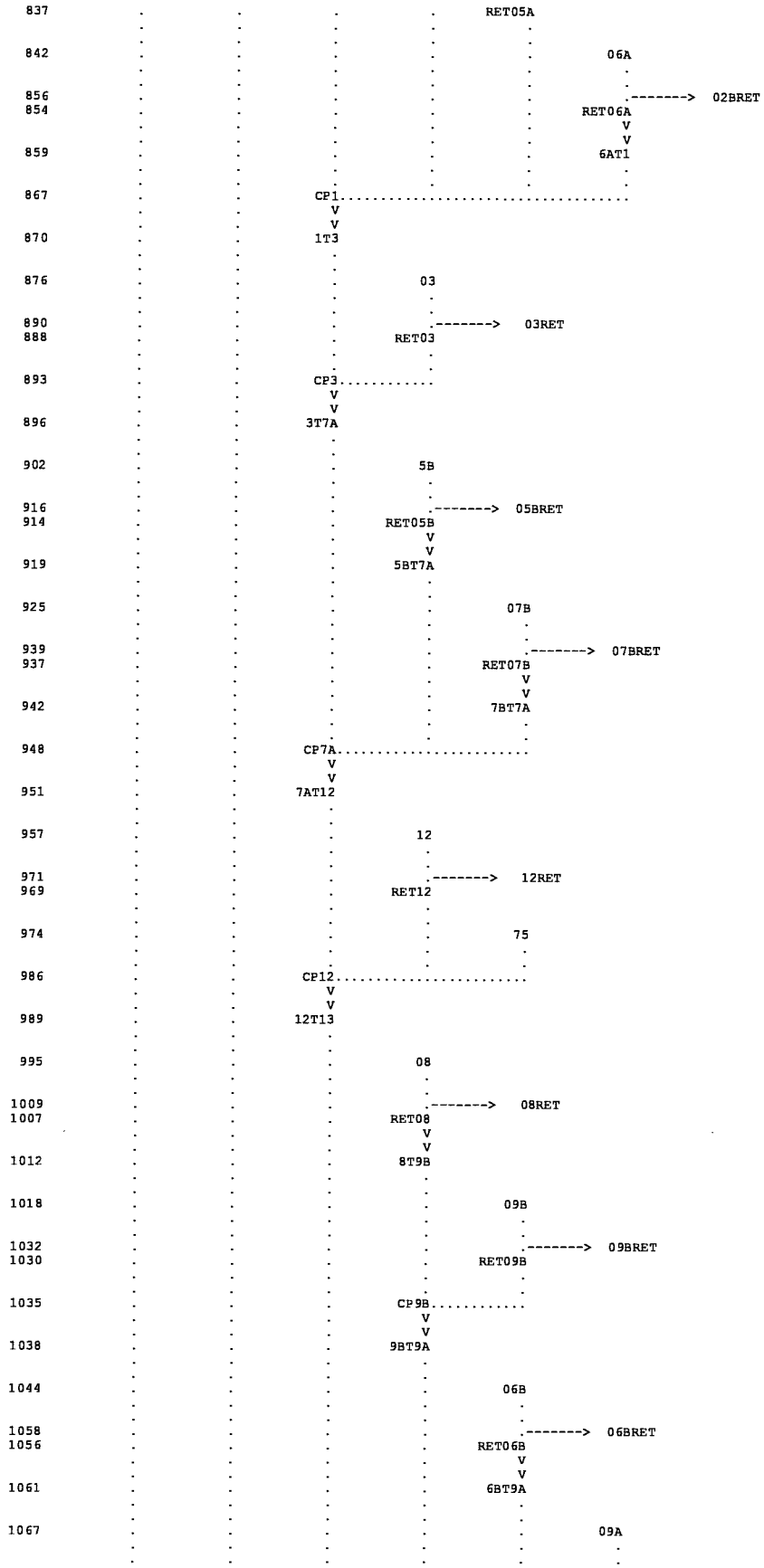
```
1293      KK    C78B COMBINE
1294      KM  COMBINE HYOROGRAPHS 78ATB ANO 78B
1295      HC       2
          *
          *

1296      KK   78BTC   ROUTE
1297      KM  ROUTE 78B TO 78C VIA WASH CROSSING MOUNTAIN ROAD, THEN SOUTH ALONG
1298      KM  WESTERN EOGE OF 78C.
1299      RS       3    FLOW      -1
1300      RC   0.035   0.022   0.035    4500  0.0033     0.00
1301      RX    0.00  100.00  110.00  115.00  120.00  125.00  130.00  135.00
1302      RY    5.00    4.00    3.50    0.00    0.00    3.50    8.00    9.00
          *
          *

1303      KK     78C   BASIN
1304      KM  BASIN 78C
1305      KM  THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1306      KM  L=0.50  Lca=0.30  S=31.8  Kn=0.048  LAG=17.4
1307      KM  PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1308      BA   0.288
1309      LG    0.18    0.15    7.60    0.14       6
1310      UI      80     273     428     624     405     236      96      48      17      16
1311      UI       0       0       0       0       0       0       0       0       0       0
          *
          *
```

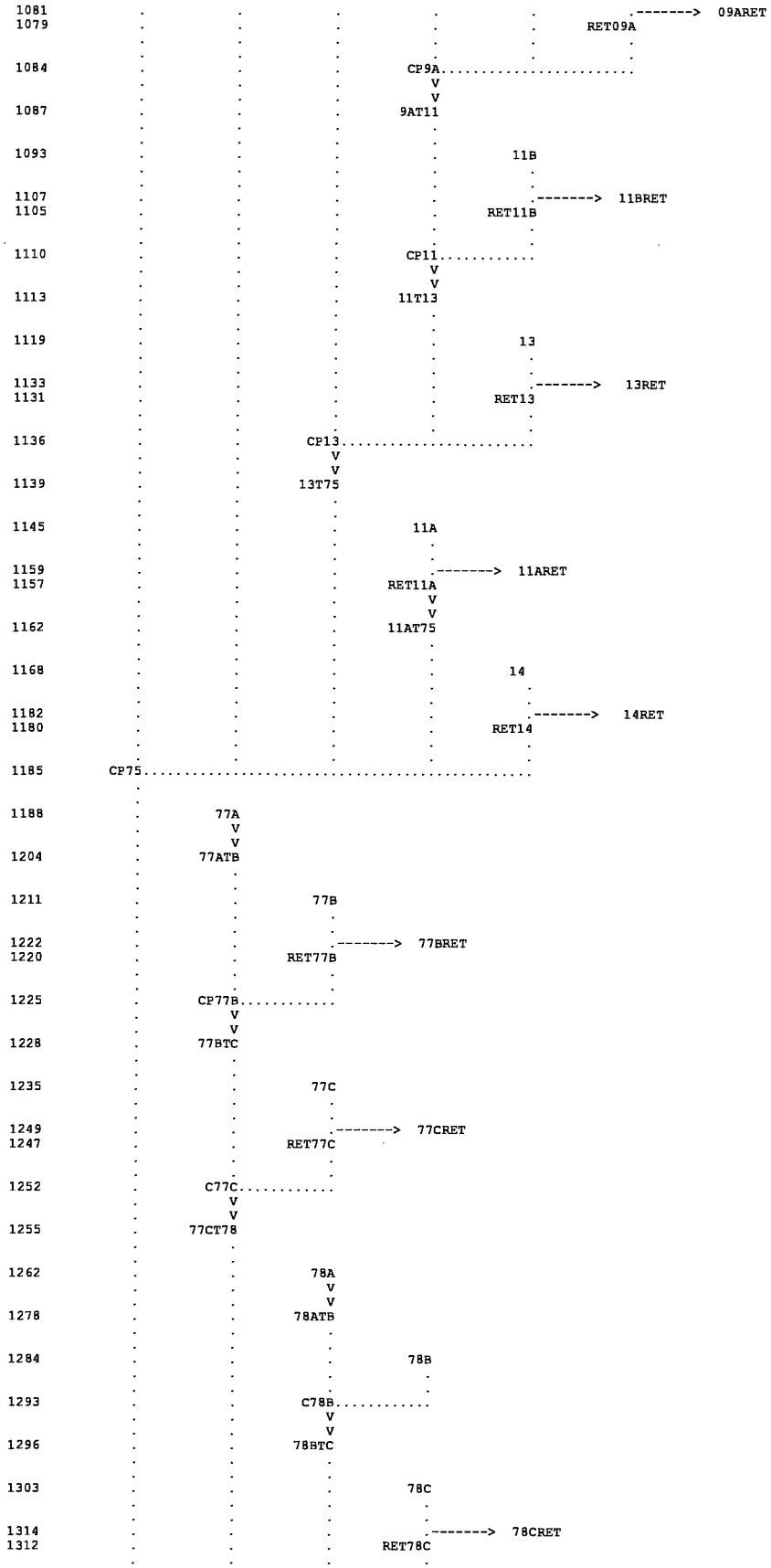

```
LINE      IO.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1312      KK  RET78C  OIVERT
1313      KM  RETAIN 80% OF THE 100 YR 2 HR RUNOFF VOLUME
1314      OT  78CRET     1.6     0.0
1315      OI       0   10000
1316      OQ       0   10000
          *
          *

1317      KK    C78C COMBINE
1318      KM  COMBINE HYOROGRAPHS 78BTC ANO 78C.
1319      HC       2
          *
          *

1320      KK   C78C2 COMBINE
1321      KM  COMBINE HYOROGRAPHS 77CT78 ANO C78C.
          * KO     2
1322      HC       2
          *
          *

1323      KK  78CT79   ROUTE
1324      KM  ROUTE 78C TO 79A FROM SIGNAL BUTTE ROAD TO THE PROPERTY BOUNOARY APPROXIMATEL
1325      KM  1/4 MILE TO THE WEST OF SIGNAL BUTTE ROAD VIA ENGINEEREO CHANNEL.
1326      RS       2    FLOW      -1
1327      RC   0.032   0.032   0.032    4215  0.0033     0.00
1328      RX    0.00    5.00   10.00   26.00   81.00   97.00  102.00  107.00
1329      RY    5.00    4.50    4.00    0.00    0.00    4.00    4.50    5.00
          *
          * ******************************************************************************
          *

1330      KK      20   BASIN
1331      KM     BASIN 20
1332      KM     THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1333      KM     L=1.02  Lca=0.45  S=17.6  Kn=0.044  LAG=27.3
1334      KM     PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1335      BA   0.270
1336      LG    0.24    0.15    7.58    0.11      33
1337      UI       0      33      97     171     223     322     388     279     210     152
1338      UI      78      54      33      15      10      10      10       0       0       0
1339      UI       0       0       0       0       0       0       0       0       0       0
1340      UI       0       0       0       0       0       0       0       0       0       0
1341      UI       0       0       0       0       0       0       0       0       0       0
          *
          *

1342      KK    RET20  OIVERT
1343      KM    RETAIN 100 YR 2 HR RUNOFF VOLUME
1344      OT    20RET   28.06     0.0
1345      OI       0   10000
1346      OQ       0   10000
          *
          *
```


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

1347      KK   CP22B COMBINE
1348      KM  COMBINE HYOROGRAPHS 78CT79 ANO RET20
          * KO     2
1349      HC       2
          *
          *

1350      KK      16   BASIN
1351      KM     BASIN 16
1352      KM     THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
1353      KM     L=0.44  Lca=0.21  S=34.1  Kn=0.045  LAG=13.4
1354      KM     PHOENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
1355      BA   0.099
1356      LG    0.25    0.17    6.76    0.16      31
1357      UI       0      50     149     266     176      79      31       8       8       0
1358      UI       0       0       0       0       0       0       0       0       0       0
1359      UI       0       0       0       0       0       0       0       0       0       0
1360      UI       0       0       0       0       0       0       0       0       0       0
1361      UI       0       0       0       0       0       0       0       0       0       0
```

```
                 *
                 *

  1362           KK   RET16  DIVERT
  1363           KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
  1364           OT   16RET    7.60      0.0
  1365           DI       0   10000
  1366           OQ       0   10000
                 *
                 *

  1367           KK      18   BASIN
  1368           KM    BASIN 18
  1369           KM    THE FOLLOWING PARAMETERS WERE PROVIOED FOR THIS BASIN
  1370           KM    L=0.72  Lca=0.33  S=20.8  Kn=0.045  LAG=21.1
  1371           KM    PHDENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
  1372           BA   0.320
  1373           LG    0.25     0.25     6.00     0.23      27
  1374           UI       0       54      213      319     509     534     361     241     108      66
  1375           UI      31       16       16        0       0       0       0       0       0       0
  1376           UI       0        0        0        0       0       0       0       0       0       0
  1377           UI       0        0        0        0       0       0       0       0       0       0
  1378           UI       0        0        0        0       0       0       0       0       0       0
                 *
                 *

  1379           KK   RET18  OIVERT
  1380           KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
  1381           DT   18RET   24.70      0.0
  1382           OI       0   10000
  1383           DQ       0   10000
                 *
                 *
1                                             HEC-1 INPUT                                        PAGE 33

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


  1384           KK   18T19   ROUTE
  1385           KM  ROUTE FLDW FROM BASIN 18 TO CP 19A
  1386           RS       1    FLDW      -1
  1387           RC   0.030   0.015   0.030     1040   .0040
  1388           RX       0     7.5       8       38      43      73    73.5      81
  1389           RY     0.8     0.5       0      0.6     0.6       0     0.5     0.8
                 *
                 *

  1390           KK   CP19A COMBINE
  1391           KM  COMBINE HYDRDGRAPHS RET16 AND 18T19
                 * KD     2
  1392           HC       2
                 *
                 *

  1393           KK      19   BASIN
  1394           KM    BASIN 19
  1395           KM    THE FOLLOWING PARAMETERS WERE PROVIOEO FOR THIS BASIN
  1396           KM    L=0.50  Lca=0.20  S=20.0  Kn=0.044  LAG=14.9
  1397           KM    PHDENIX VALLEY S-GRAPH WAS USEO FOR THIS BASIN
  1398           BA   0.138
  1399           LG    0.24     0.15     8.36     0.08      37
  1400           UI       0       55      171      315     271     155      59      24      10       0
  1401           UI       0        0        0        0       0       0       0       0       0       0
  1402           UI       0        0        0        0       0       0       0       0       0       0
  1403           UI       0        0        0        0       0       0       0       0       0       0
  1404           UI       0        0        0        0       0       0       0       0       0       0
                 *
                 *

  1405           KK   RET19  DIVERT
  1406           KM   RETAIN 100 YR 2 HR RUNOFF VOLUME
                 * KO     2
  1407           DT   19RET    11.0      0.0
  1408           DI       0   10000
  1409           DQ       0   10000
                 *
                 *

  1410           KK      17   BASIN
  1411           KM    BASIN 17
  1412           KM    THE FOLLDWING PARAMETERS WERE PRDVIDED FDR THIS BASIN
  1413           KM    L=0.92  Lca=0.47  S=19.6  Kn=0.042  LAG=25.0
  1414           KM    PHOENIX VALLEY S-GRAPH WAS USED FDR THIS BASIN
  1415           BA   0.141
  1416           LG    0.25     0.25     4.08     0.55      33
  1417           UI       0       19       64      104     139     220     184     135      97      53
  1418           UI      32       19        8        6       6       0       0       0       0       0
  1419           UI       0        0        0        0       0       0       0       0       0       0
  1420           UI       0        0        0        0       0       0       0       0       0       0
  1421           UI       0        0        0        0       0       0       0       0       0       0
                 *
                 *
1                                             HEC-1 INPUT                                        PAGE 34

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


  1422           KK   RET17  DIVERT
  1423           KM   RETAIN 100 YR 2 HR RUNDFF VOLUME
                 * KO     2
  1424           DT   17RET   12.74      0.0
  1425           DI       0   10000
  1426           DQ       0   10000
                 *
  1427           ZZ
1
            SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSIDN OR PUMP FLDW
```


NO.
(.) CONNECTOR
(<---) RETURN OF DIVERTED OR PUMPED FLOW
588
73A
602
73ATB
609
73B
620
73BRET
618
RET73B
623
CP73B
626
73BTC
633
73C
645
73CRET
643
RET73C
648
CP73C
651
73T74C
658
74A
672
74ATB
680
74B
692
74BRET
690
RET74B
695
CP74B
698
74BTC
705
74C
717
74CRET
715
RET74C
720
CP74C
723
74CT75
732
10
746
10RET
744
RET10
749
10T75
755
02B
769
02BRET
767
RET02B
772
2BT2
779
02C
796
02CRET
791
RET02C
799
CP2
802
2T1
808
01
822
01RET
820
RET01
825
05A
839
05ARET


837
RET05A
842
06A
856
02BRET
854
RET06A
859
6AT1
867
CP1
870
1T3
876
03
890
03RET
888
RET03
893
CP3
896
3T7A
902
5B
916
05BRET
914
RET05B
919
5BT7A
925
07B
939
07BRET
937
RET07B
942
7BT7A
948
CP7A
951
7AT12
957
12
971
12RET
969
RET12
974
75
986
CP12
989
12T13
995
08
1009
08RET
1007
RET08
1012
8T9B
1018
09B
1032
09BRET
1030
RET09B
1035
CP9B
1038
9BT9A
1044
06B
1058
06BRET
1056
RET06B
1061
6BT9A
1067
09A


1081
1079
RET09A
09ARET
1084
CP9A
1087
9AT11
1093
11B
1107
1105
RET11B
11BRET
1110
CP11
1113
11T13
1119
13
1133
1131
RET13
13RET
1136
CP13
1139
13T75
1145
11A
1159
1157
RET11A
11ARET
1162
11AT75
1168
14
1182
1180
RET14
14RET
1185
CP75
1188
77A
1204
77ATB
1211
77B
1222
1220
RET77B
77BRET
1225
CP77B
1228
77BTC
1235
77C
1249
1247
RET77C
77CRET
1252
C77C
1255
77CT78
1262
78A
1278
78ATB
1284
78B
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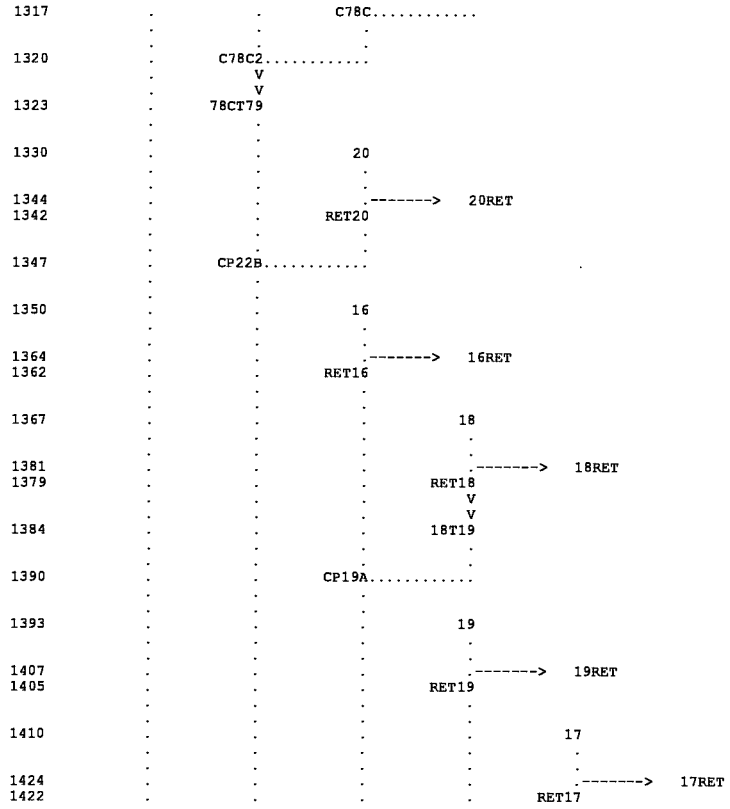
C78B
1296
78BTC
1303
78C
1314
1312
RET78C
78CRET



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*****************************************
 *                                       *                                       *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                       *    U.S. ARMY CORPS OF ENGINEERS
*
 *               JUN   1998              *                                       *    HYDROLOGIC ENGINEERING CENTER
*
 *            VERSION 4.1                *                                       *         609 SECOND STREET
*
 *                                       *                                       *       DAVIS, CALIFORNIA 95616
*
 *  RUN DATE   25SEP17  TIME  12:51:29   *                                       *           (916) 756-1104
*
 *                                       *                                       *
*
 *****************************************
*****************************************
```

FILE: DU34INT.DAT

MODEL REVISED: 9-25-2017

PROJECT: MASTER DRAINAGE REPORT FOR DU 3/4 AT EASTMARK

THIS MODEL IS AN EXERPT OF THE FULL BUILD OUT MODEL. NO REFERENCE TO
OTHER MODELS IS REQUIRED TO RUN THIS MODEL.

MODEL REVISION DESCRIPTION:

THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLOOD CONTROL
DISTRICT OF MARICOPA COUNTY (WS4-SEM.DAT). LAND USES FOR OU 3/4,
5N, AND 6N HAVE BEEN UPDATED TO REFLECT DETAILED PLANNING.
LAND USES FOR DU 1 AND 2 HAVE BEEN REVISED TO REMAIN AS EXISTING LAND
USE FOR THIS INTERIM CONDITION. THIS IS AN INTERIM CONDITION MODEL
WHICH INCLUDES ONSITE MODELING FOR THE FOLLOWING DEVELOPMENT
UNITS WHICH HAVE HAD DETAILED MASTER PLANS PREPARED, INCLUDING:
DU 8/9, 3S, 7N, 5N, 6N, AND 6S. THE REMAINING ONSITE IS CONTEMPLATED
AS EXISTING LAND USE.

MODEL REVISED BY:
WOOD, PATEL & ASSOCIATES, INC.
STEVE MCKEE, P.E.

FILE PATH:
Z:\EASTMARK\2017\174708\PROJECT SUPPORT\REPORTS\DRAINAGE\
DU 3-4 MP UPDATE\HYDROLOGY\PROPOSED\DU34INT.DAT

****

FILE: DU56INT.DAT

MODEL REVISED: 4-10-2017

PROJECT: MASTER ORAINAGE REPORT FOR OU 5, 5N, AND 6 SOUTH AT EASTMARK

THIS MODEL IS AN EXERPT OF THE FULL BUILO OUT MODEL. NO REFERENCE TO OTHER MOOELS IS REQUIREO TO RUN THIS MODEL.

MOOEL REVISION DESCRIPTION:

THIS MODEL IS AN EXERPT OF THE MODEL PROVIDEO BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). LAND USES FOR OU 5,5N,6S, 6N, AND PARCELS 3/4-1 THROUGH 3/4-4 WITHIN OU 3/4 HAVE BEEN UPOATEO TO REFLECT OETAILED PLANNING. LANO USES FOR DU 1, 2, ANO THE REMAINING OU 3/4 HAVE BEEN REVISEO TO REMAIN AS EXISTING LAND USE FOR THIS INTERIM CONOITION. THIS IS AN INTERIM CONDITION MOOEL WHICH INCLUDES ONSITE MODELING FOR THE FOLLOWING OEVELOPMENT UNITS WHICH HAVE HAD DETAILEO MASTER PLANS PREPAREO, INCLUDING: DU 8/9, 3S, AND 7N. THE REMAINING ONSITE IS CONTEMPLATEO AS EXISTING LAND USE.

MODEL REVISEO BY:
WOOO, PATEL & ASSOCIATES, INC.
STEVE MCKEE, P.E.

FILE PATH:
R:\MESA PROVING GROUNOS\2016\164528\PROJECT SUPPORT\REPORTS\DRAINAGE\
DU 5-5N-6S MASTER PLAN\HYDROLOGY\OU56INT.OAT

****

FILE: DU6SINT.DAT

MODEL REVISED: 10-1-2015

PROJECT: MASTER ORAINAGE REPORT FOR OU 6 SOUTH AT EASTMARK

THIS MODEL IS AN EXERPT OF THE FULL BUILO OUT MODEL. NO REFERENCE TO OTHER MOOELS IS REQUIRED TO RUN THIS MODEL.

MOOEL REVISION DESCRIPTION:

THIS MODEL IS AN EXERPT OF THE MODEL PROVIOEO BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). LAND USES FOR OU 6S AND PHASE 1 WITHIN PARCEL 10 OF DU 3/4 HAVE BEEN UPOATED TO REFLECT DETAILEO PLANNING. LAND USES FOR OU 5E,THE REMAINING OU 3/4, AND THE UNDEVELOPEO PORTION OF DU 6N HAS BEEN REVISED TO REMAIN AS EXISTING LANO USE FOR THIS INTERIM CONDITION.
THIS IS AN INTERIM CONOITION MODEL WHICH INCLUDES ONSITE MOOELING FOR THE FOLLOWING DEVELOPMENT UNITS WHICH HAVE HAD OETAILED MASTER PLANS PREPAREO, INCLUOING: DU 8/9, 3S, ANO 7N. THE REMAINING ONSITE IS CONTEMPLATED AS EXISTING LANO USE.

MOOEL REVISED BY:
WOOD, PATEL & ASSOCIATES, INC.
STEVE MCKEE, E.I.T.

FILE PATH:
R:\MESA PROVING GROUNDS\2015\154382\PROJECT SUPPORT\REPORTS\ORAINAGE\
OU 6S MASTER PLAN\HYOROLOGY\OU6SINT.DAT

****

FILE: OU5EINT.DAT

MOOEL REVISED: 04-21-2014

PROJECT: MASTER ORAINAGE REPORT FOR DU 5 EAST AT EASTMARK

THIS MODEL IS AN EXERPT OF THE FULL BUILO OUT MODEL. NO REFERENCE TO OTHER MOOELS IS REQUIRED TO RUN THIS MODEL.

MOOEL REVISION DESCRIPTION:

THIS MOOEL IS AN EXERPT OF THE MOOEL PROVIDEO BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). LAND USE FOR OU 5E HAS CHANGEO FROM GOLF TO INOUSTRIAL. AREAS THAT PREVIOUSLY DRAINED TO GOLF WHERE 100-YEAR, 24-HOUR RETENTION WAS PROVIDED WILL NOW BE REQUIRED TO SELF RETAIN RETENTION VOLUME FROM THEIR SITE FOR THE 100-YEAR, 24-HOUR STORM PEAK FLOWS HAVE REMAINED THE SAME. THIS IS AN INTERIM CONDITION MODEL WHICH INCLUDES ONSITE MOOELING FOR AREAS THAT HAVE HAD DETAILED MASTER PLANS PREPARED AND THE REMAINING ONSITE IS CONTEMPLATED AS EXISTING LAND USE.

MODEL REVISED BY:
WOOD, PATEL & ASSOCIATES, INC.
DANIEL MATTHEWS, P.E.

FILE PATH:
R:\MESA PROVING GROUNDS\2014\144173\PROJECT SUPPORT\REPORTS\DRAINAGE\
DU 5E DRAINAGE MASTER PLAN\HYDROLOGY\DU5EINT.DAT

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FILE: EMDU5E.DAT

MODEL REVISED: 04-18-2014

PROJECT: EASTMARK MASTER DRAINAGE UPDATE (FOR DEVELOPMENT UNIT 5 EAST)

THIS IS A POST DEVELOPED MODEL REVISION TO REFLECT PLANNED LAND USES FOR DEVELOPMENT UNIT 5 EAST (DU 5E).

MODEL REVISION DESCRIPTION:

THIS MODEL IS AN EXERPT OF THE MODEL PROVIDED BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY (WS4-SEM.DAT). LANO USE FOR DU 5E HAS CHANGED FROM GOLF TO INDUSTRIAL. AREAS THAT PREVIOUSLY DRAINED TO GOLF WHERE 100-YEAR, 24-HOUR RETENTION WAS PROVIDEO WILL NOW BE REQUIREO TO SELF RETAIN RETENTION VOLUME FROM THEIR SITE FOR THE 100-YEAR, 24-HOUR STORM PEAK FLOWS HAVE REMAINEO THE SAME. THE REMAINING PORTION OF LAND THAT WAS ASSOCIATED WITH GOLF HAS BEEN REVISED TO RESIDENTIAL USE.

MODEL REVISED BY:
WOOD, PATEL & ASSOCIATES, INC.

OANIEL MATTHEWS, P.E.

FILE PATH:
R:\MESA PROVING GROUNOS\2014\144173\PROJECT SUPPORT\REPORTS\ORAINAGE\
EASTMARK OVERALL MASTER ORAINAGE UPOATE\HYOROLOGY\PROPOSEO\EMDU5E.OAT

****

FILE: EMDU34.OAT

MOOEL REVISEO: 04-14-2014

PROJECT: EASTMARK MASTER ORAINAGE UPOATE FOR OEVELOPMENT UNIT 3/4

THIS IS A POST OEVELOPEO MOOEL REVISION TO REFLECT PLANNEO LANO USES
FOR OEVELOPMENT UNIT 3/4 (OU 3/4).

MOOEL REVISION OESCRIPTION:

THIS MOOEL IS AN EXERPT OF THE MOOEL PROVIOEO BY THE FLOOO CONTROL
OISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). LANO USE FOR OU 3/4 HAS BEEN
REVISEO TO REFLECT MORE OETAILEO PLANNING. MINOR ADJUSTMENTS TO LANO
USES OUTSIOE OF OU 3/4 HAVE BEEN MADE. ADOITIONALLY WATERSHEO
BOUNOARIES HAVE BEEN REVISEO TO REFLECT A CONCEPTUAL MASS GRADE PLAN
PROVIOEO TO WOOO/PATEL BY A CONSULTANT OF THE OEVELOPER OMB MESA
PROVING GROUNOS LLC.

MOOEL REVISEO BY:
WOOO, PATEL & ASSOCIATES, INC.
OANIEL MATTHEWS, P.E.

FILE PATH:
R:\MESA PROVING GROUNOS\2011\113697.09\PROJECT SUPPORT\REPORTS\
EASTMARK OVERALL ORAINAGE MASTER UPOATE\HYOROLOGY\PROPOSEO\EMDU34.OAT

****

FILE: EMDU3S.OAT

MOOEL REVISEO: 12-11-2013

PROJECT: EASTMARK MASTER ORAINAGE UPOATE FOR OEVELOPMENT UNIT 3 SOUTH

THIS IS A POST OEVELOPEO MOOEL REVISION TO REFLECT PLANNEO LANO USES
FOR OEVELOPMENT UNIT 3 SOUTH (OU-3S).

MOOEL REVISION OESCRIPTION:

THIS MOOEL IS AN EXERPT OF THE MOOEL PROVIOEO BY THE FLOOO CONTROL
OISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). LANO USES FOR OU-3S ARE
CONSISTENT WITH THE PREVIOUS MOOEL (EMDU89.OAT) THEREFORE RESULTING
PEAK FLOWS HAVE REMAINEO THE SAME.

MOOEL REVISEO BY:
WOOO, PATEL & ASSOCIATES, INC.
OANIEL MATTHEWS, P.E.

FILE PATH:
R:\MESA PROVING GROUNOS\2011\113697.08\PROJECT SUPPORT\REPORTS\
EASTMARK OVERALL ORAINAGE MASTER UPOATE\HYOROLOGY\PROPOSEO\EMDU3S.OAT

****

FILE: EMDU89.OAT

MOOEL REVISEO: 1-22-2013

PROJECT: EASTMARK 6&6

THIS IS A POST OEVELOPEO MOOEL REVISION TO REFLECT UPOATEO PLANNING
FOR OEVELOPMENT UNITS 8&9 (OU 8&9).

MOOEL REVISION OESCRIPTION:

THIS MOOEL IS AN EXERPT OF THE MOOEL PROVIOEO BY THE FLOOO CONTROL
OISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). ONSITE WATERSHEOS WERE
UPOATEO TO REFLECT CURRENT PLAN FOR OEVELOPMENT UNITS 8 & 9.

MOOEL REVISEO BY:
WOOO, PATEL & ASSOCIATES, INC.
OARREN E. SMITH, P.E.

FILE PATH:
R:\MESA PROVING GROUNOS\2012\123835\PROJECT SUPPORT\REPORTS\
ORAINAGE\HYOROLOGY\PROPOSEO\EMDU89.OAT

****

FILE: MPGOU7.OAT

MOOEL REVISEO: 09-07-2011

PROJECT: MESA PROVING GROUNOS

THIS MOOEL SHOULO REPLACE WS4-SEM.OAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
BELOW. REFERENCING WS2-NEM.OSS IS STILL REQUIREO.

THIS IS A POST OEVELOPEO MOOEL REVISION TO REFLECT UPOATEO PLANNING
FOR OEVELOPMENT UNIT 7 (OU7)PROVIOEO BY ARIZONA LANO OESIGN ON 09/02/201
09/02/2011.

MOOEL REVISION OESCRIPTION:

THIS MOOEL IS AN EXERPT OF THE MOOEL PROVIOEO BY THE FLOOO CONTROL
OISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). ONSITE WATERSHEOS WERE
UPOATEO TO REFLECT A GRADING PLAN PROVIOEO BY LO TEAM ON 8/30/2011.
MOOELING OF THE POWERLINE FLOOOWAY HAS BEEN UPOATEO TO REFLECT THE
EXISTING SECTIONS ANO SLOPE PER AS-BUILT ORAWINGS ACROSS THE MPG
SITE.

MOOEL REVISEO BY:

WOOO, PATEL & ASSOCIATES, INC.
DANIEL W. MATTHEWS, E.I.T.

FILE PATH:
R:\MESA PROVING GROUNOS\2011\113697\PROJECT SUPPDRT\REPORTS\
ORAINAGE\HYOROLOGY\MPGDU7.DAT

****

FILE: MPG20RT2.OAT

MODEL REVISEO: 04-25-2011

PRDJECT: MESA PROVING GROUNDS

THIS MDDEL SHOULO REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
BELOW. REFERENCING WS2-NEM.OSS IS STILL REQUIRED.

THIS IS A 100-YEAR, 2-HOUR RETENTION SCENARIO MODEL USING
THE 20MSF COMMERCIAL SPACE AND 15K OU LANO PLAN PROVIOED
BY SWABACK PARTNERS ON 12/12/07.

MODEL REVISIDN OESCRIPTION:

THIS MODEL IS AN EXERPT OF THE MODEL PR0VIDED BY THE FLOOO CONTROL
OISTRICT OF MARICOPA CDUNTY (WS4-SEM.OAT). ONSITE WATERSHEDS 01 ANO
20 WERE UPDATEO TO REFLECT THE INCDRPDRATIDN OF THE FIRST SOLAR SITE
IN THE NORTHEAST CORNER DF OU-6. WATERSHEO 02 WAS SPLIT INTO 02A ANO
02B. LANO USE WAS CHANGEO TO INDUSTRIAL FOR 02B ANO ENTIRELEY
RESIOENTIAL FOR 02A.
THE FIRST SOLAR SITE RUNOFF WILL NDW BE RETAINEO ENTIRELY ONSITE.

MDDEL REVISEO BY:
WOOO, PATEL & ASSDCIATES, INC.
STEPHEN M. SCINTO, P.E.

FILE PATH:
R:\MESA PRDVING GRDUNOS\2010\103564.04\PRDJECT SUPPORT\REPORTS\
DRAINAGE\HYOROLOGY\POST-DEVELDPEO 100YR2HR RETENTION MODEL\
MPG20RT2.DAT

****

FILE: MPG20RT2.OAT

MODEL REVISEO: 09-16-08

PROJECT: MESA PROVING GROUNDS

THIS MDDEL SHOULO REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
BELOW. REFERENCING WS2-NEM.OSS IS STILL REQUIRED.

THIS IS A 100-YEAR, 2-HOUR RETENTION SCENARID MODEL USING
THE 20MSF COMMERCIAL SPACE AND 15K OU LANO PLAN PROVIDED
BY SWABACK PARTNERS ON 12/12/07.

MOOEL REVISIDN DESCRIPTION:

THIS MODEL IS AN EXERPT OF THE MODEL PR0VIDEO BY THE FLOOO CONTROL
DISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT). ONSITE WATERSHEOS 01, 02,
03, AND 06 WERE UPOATEO TO REFLECT THE CURRENT GOLF COURSE
CDNFIGURATION.

MODEL REVISEO BY:
WOOD, PATEL & ASSOCIATES, INC.
OANIEL W. MATTHEWS, E.I.T.

FILE PATH:
R:\MESA PROVING GROUNOS\2006\062753\PROJECT SUPPORT\HYDRO\MDR-20-15 LANO
PLAN\2NO SUBMITTAL(CDM)\HYOROLOGY\MPG20RT2.DAT

****

FILE: MPG20RT2.DAT

MDDEL REVISED: 05-15-08

PROJECT: MESA PRDVING GROUNDS

MODEL REVISIDN DESCRIPTION:

THIS MODEL SHDULD REPLACE WS4-SEM.DAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
BELDW. REFERENCING WS2-NEM.DSS IS STILL REQUIRED.

THIS IS A 100-YEAR, 2-HOUR RETENTIDN SCENARIO MODEL USING
THE 20MSF COMMERCIAL SPACE AND 15K DU LAND PLAN PROVIDED
BY SWABACK PARTNERS ON 12/12/07.

THIS MODEL IS AN EXERPT OF THE MDDEL PROVIDED BY THE FLOOD CONTRDL
DISTRICT DF MARICDPA CDUNTY (WS4-SEM.DAT). WATERSHED 79A WAS UPDATED
AS REQUESTED BY FLOOD CONTROL DISTRICT DF MARICOPA COUNTY TD REDUCE THE
PERCENT IMPERVIOUS VALUE FRDM 80% TO 0% TD MATCH THE LAND USE AS MODELED
WITHIN THE EAST MESA ADMP.

MODEL REVISED BY:
WDDD, PATEL & ASSDCIATES, INC.
OANIEL W. MATTHEWS, E.I.T.

FILE PATH:
R:\MESA PROVING GRDUNDS\2006\062753\PRDJECT SUPPORT\HYORO\MDR-20-15 LAND
PLAN\2ND SUBMITTAL\POST-DEVELDPED 100YR2HR RETENTIDN MODEL (MPG20RT2)\
MPG20RT2.DAT

****

FILE: MPG20RT2.DAT

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      MOOEL REVISEO: 01-08-08

      PROJECT: MESA PROVING GROUNOS

      MOOEL REVISION OESCRIPTION:

      THIS MOOEL SHOULO REPLACE WS4-SEM.OAT IN THE HEC-1 RUN SEQUENCE SPECIFIE
      BELOW.  REFERENCING WS2-NEM.OSS IS STILL REQUIREO.


      THIS IS A 100-YEAR, 2-HOUR RETENTION SCENARIO MOOEL USING
      THE 20MSF COMMERCIAL SPACE ANO 15K OU LANO PLAN PROVIOEO
      BY SWABACK PARTNERS ON 12/12/07.


      THIS MOOEL IS AN EXERPT OF THE MOOEL PROVIOEO BY THE FLOOO CONTROL
      OISTRICT OF MARICOPA COUNTY (WS4-SEM.OAT).  WATERSHEOS 68A, 68B,
      70A, 70B, 71, 73B, 73C, 74B, 74C, 75, 77B, 77C, 78B, 78C, ANO 79A
      HAVE ALL BEEN UPOATEO TO REFLECT CURRENT WATERSHEO OELINEATIONS,
      NEW OEVELOPMENT, CURRENT RETENTION,ANO FLOOO ROUTING.  BASIN 75
      HAS BEEN UPOATEO TO REFLECT PLANNEO OEVELOPEMENT FOR THE MESA
      PROVING GROUNOS SITE.

      MOOEL REVISEO BY:
      WOOO, PATEL & ASSOCIATES, INC.
      OANIEL W. MATTHEWS, E.I.T.

      FILE PATH:
      R:\MESA PROVING GROUNOS\2006\062753\PROJECT SUPPORT\HYORO\MDR-20-15 LANO
      PLAN\HYOROLOGY\POST-OEVELOPEO 100YR2HR RETENTION MOOEL (MPG20RT2)\
      MPG20RT2.OAT

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


 IO  Kirkham Michael:
 Last Revised Oate:  1/22/03
 Filename:  WS4-SEM.OAT

 Comments Oated 1/22/03 (CJ)

 This model should be used ONLY for the Rittenhouse and Chandler Heights
 Basin Oesign Project - Final Oesign Analyses.

 This model is one of several models that represent the EMF watershed.
 This model covers the Southeast Mesa Area and should reference as a OSS
 the watershed model for the Northeast Mesa Area (Filename WS2-NEM.OAT).

 This model is necessary to determine the input hydrographs for the
 Rittenhouse Basin Oesign HEC-RAS Unsteady State analysis.  To develop
 the necessary input hydrographs the following models should be run in order.
 Because the files utilize a TAPE21 file to export import hydrographs
 between models, prior to running the FIRST model (WS1-NWM.OAT) any existing
 TAPE21 file in the directory should be deleted.  The run procedure order is:

      1)  WS1-NWM.OAT
      2)  WS2-NEM.OAT
      3)  WS3-QCSW.OAT
      4)  WS4-SEM.OAT (referencing WS2-NEM.OSS for the OSS file)
      5)  RT1-BASE.OAT

 The necessary input hydrographs for the Rittenhouse Basin analysis
 are determined in RT1-BASE.  In that output file, the hydrograph at
 RWFLO1 should be exported and used as the input hydrograph at the
 EMF Reach 4 Cross Section 17.082.  And the hydrograph at RITTEN should
 be exported and used as the input hydrograph for the Rittenhouse Main
 Channel at Cross Section 820.00


 ********************************************************************************
 **** NOTE BY PRIMATECH ENGINEERS:                                           ****
 **** OATE: 06/12/2001                                                       ****
 **** THE NEW FILE NAME IS: SEBTALT2.OAT                                     ****
 **** THE FILE WAS RENAMEO AS <<RTBTALT2.OAT>> FOR THE EAST MARICOPA         ****
 **** FLOOOWAY CAPACITY MITIGATION PROJECT, BY FLOOO CONTROL OISTRICT OF     ****
 **** MARICOPA COUNTY.                                                       ****
 **** THE FILE WAS RENAMEO <<RTBTALT3.OAT>> ANO UPOATEO USING GREEN ANO      ****
 **** AMPT FUTURE CONOITIONS FOR BASINS 258 TO 268.                          ****
 ********************************************************************************


  THIS MOOEL WAS ORIGINALLY MIOOOUT.OAT
  IT HAS BEEN MOOIFIEO BY CPE (7/2000)
  FOR ALTERNATIVE 2 FOR THE EAST MARICOPA FLOOWAY
  CAPACITY MITIGATION ANO MULTI-USE CORRIOOR STUOY
  TO ROUTE BOTH THE POWERLINE FLOOWAY
  ANO THE SANTAN FREEWAY CHANNEL INTO THE RAY BASIN PRIOR THEIR OUTFALL
  INTO THE EMF

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

       Model files changed by Collins/Pina Engineering
       to reflect multi-use design concepts (recreation
       and environment) proposed throughout the entire
       EMF Corridor.    July 2000


  VERSION 8.06  CPE 7/31/00

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


*******************************************************************************
 FILENAME: MIOOOUT.OAT

 ALL CIP INFRASTRUCTURE IS IN PLACE, FUTURE CONOITIONS LANOUSE IS IN PLACE
 FLOW IS ROUTEO UP ELLSWORTH ROAD IN A EARTH LINEO CHANNEL

*******************************************************************************
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PRODUCED BY DIBBLE AND ASSOCIATES AND HOSKIN ENGINEERING CONSULTANTS.
File Name: Final8.Dat
Revised - Jan. 2000 by SZ (Wood/Patel) From Final7.dat - new Z-V & Sideweir
Revised - Jan. 2000 by SZ (Wood/Patel) from Final6.dat - 60% review comments
Revised - Dec. 1999 by SZ (Wood/Patel) from Final5.dat
Revised - Dec. 1999 by SZ (Wood/Patel) from Final4.dat
Revised - Nov. 1999 by SZ (Wood/Patel) from Final3.dat
Revised - June 1999 by SZ (Wood/Patel) for Final Model from Opt1.dat.
Revised - May 1999 by SZ (Wood/Patel) for Option 1, Based on Model SDIB.DAT
REVISED - MAY, 1999 BY VAS TO INCORPORATE INCREASE OF SUBBASIN RETENTION AND
          REVISIONS TO THE REGIONAL DETENTION BASIN STORAGE
REVISED - FEB, 1999 BY VALERIE SWICK, FCD OF MARICOPA COUNTY
REVISED - MAY, 1998 BY D&A

REVISED BY VALERIE SWICK, FEB. 26, 1998

FLOWS FROM DETENTION BASIN LOCATED AT NE CORNER OF ELLIOT AND ELLSWORTH ROADS
IS ROUTED TO THE SOUTHWEST BY SIPHON DRAW TO SUBBASIN 70A. FROM THERE THEY
WILL BE ROUTED BY A CHANNEL TO THE EME. FLOWS FROM SUBBASINS ADJACENT TO
SANTAN FREEWAY ALIGNMENT WILL BE ROUTED SOUTH TO SUBBASIN 70A WHERE THEY WILL
BE COMBINED WITH FLOW IN SIPHON DRAW.

EAST MESA AREA DRAINAGE MASTER PLAN
AREA SOUTH OF SUPERSTITION (U.S. HWY 60)
AUGUST 1997
SOUTHEAST MESA HIGH RESOLUTION MODEL

**********FUTURE CONDITION MODEL OF THE WATERSHED**********

**********ATTENTION**********
  SUBBASINS 75, 79A, 79B, 78E,  LANDUSES WERE NOT
  CHANGED BECAUSE IT WAS FELT THAT THEIR FUTURE CONDITIONS LANDUSES WOULD BE
  SIMILAR TO THE EXISTING CONDITIONS LANDUSES.
  RETENTION VOLUMES WILL ALSO NOT BE UTILIZED FOR SUBBASINS 75, 79A, 79B, 78E
  SOME QUEEN CREEK SUBBASINS WILL ALSO NOT HAVE RETENTION VOLUMES, EITHER
  BECAUSE THEY LIE IN PINAL COUNTY AND WE DONT KNOW PINAL COUNTIES PLANS OR
  THEY LIE IN THE SANTAN MOUNTAINS AND WON'T GET DEVELOPED
  WILLIAMS GATEWAY AIRPORT (SUBBASINS 80A, 80B, 81A, AND 81B) ARE MODELED AS
  FUTURE CONDITIONS AND HAVE RETENTION VOLUMES FOR THE 100YR 2HR STORM
**********
FILENAME:  SDIBB.DAT

THIS MODEL REPRESENTS THE FUTURE CONDITION OF THE WATERSHED.
TOTAL DRAINAGE AREA IS APPROXIMATELY 213 SQ. MI.
THIS MODEL USES A Kn VALUE OF 0.09 FOR DESERT LAND USE DUE TO SHEET FLOW
CONDITIONS.

100-YEAR 24-HOUR FREQUENCY
AREAL REDUCTIONS FROM FCD HYDROLOGY MANUAL
THIS MODEL INCLUDES INFLOW FROM NORTH OF THE SUPERSTITION FREEWAY
AND EAST OF THE CAP

DATA FROM THE QUEEN CREEK ADMS HAS BEEN ADDED TO CALCULATE FLOWS INTO THE
EMF.   MUSKINGUM ROUTING NSTEPS WERE ADJUSTED TO BE WITHIN THE SUGGESTED
RANGE.

METHODOLOGY
THE US CORPS OF ENGINEERS FLOOD HYDROLOGY MODEL HEC-1 DATED SEP1990 VER 4.0
SCS TYPE II RAINFALL DISTRIBUTION
S-GRAPH HYDROGRAPH
GREEN AND AMPT INFILTRATION EQUATION USED FOR CALCULATING LOSSES
NORMAL DEPTH STORAGE CHANNEL ROUTING
APPROXIMATE DIRECTION, LOCATION, AND LENGTH OF THE WASHES HAVE BEEN
EVALUATED BASED ON FIELD INVESTIGATION, USGS MAPS, LANDIS AERIAL SURVEYS
DATED 1994
THE NOAA TECHNICAL MEMORANDUM NOAA ATLAS 2 DEPTH AREA RATIOS

ORIGINAL STUDY PERFORMED BY LISA C. YOUNG AND AFSHIN AHOURAIYAN, UPDATED BY
DAVID DEGERNESS (OCT-DEC, 1996). REVIEWED BY VALERIE A. SWICK
AND AMIR MOTAMEDI OF THE FLOOD CONTROL DISTRICT
HYDROLOGY BRANCH ENGINEERING DIVISION, FLOOD CONTROL
DISTRICT OF MARICOPA COUNTY, DECEMBER - JULY 1995.

ASSUMED VELOCITY OF 1 FT/SEC FOR SHEET FLOW, 2-3 FT/SEC FOR WASH/NATURAL
CHANNEL, 3 FT/SEC FOR ROAD AND GRASS CHANNEL, 10FT/SEC FOR CONCRETE CHANNEL

VELOCITIES FOR ADMP IMPROVEMENT CHANNELS FROM DIBBLE AND ASSOCIATES
SUGGESTED ALTERNATIVES (JULY 1, 1997)

**********
**** THE FOLLOWING NOTE WAS ADDED BY PRIMATECH ENGINEERS ON 06-12-2001 ****
**********
NOTE: MUST USE NEBUILD.DSS AS THE DSS FILE TO IMPORT FLOWS ACROSS THE
      SUPERSTITION FREEWAY.
**********


NOTE: MUST USE NDIBF.DSS AS THE DSS FILE TO IMPORT FLOWS ACROSS THE
      SUPERSTITION FREEWAY.

DDM MCUHP2 SE MESA ADMP - SOUTH OF SUPERSTITION FWY, FUTURE CONDITIONS

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

    IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1APR97  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         600  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      3APR97  ENDING DATE
                    NDTIME        0155  ENDING TIME
                     ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL      .08 HOURS
                       TOTAL TIME BASE    49.92 HOURS

          ENGLISH UNITS
```

```
DRAINAGE AREA         SQUARE MILES
PRECIPITATIDN DEPTH   INCHES
LENGTH, ELEVATION     FEET
FLOW                  CUBIC FEET PER SECDND
STORAGE VOLUME        ACRE-FEET
SURFACE AREA          ACRES
TEMPERATURE           DEGREES FAHRENHEIT
```

```
569 JD        INDEX STORM ND. 1
                  STRM        3.60  PRECIPITATION DEPTH
                  TRDA         .01  TRANSPOSITION DRAINAGE AREA

570 PI          PRECIPITATIDN PATTERN
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

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580 JD        INDEX STDRM NO. 2
                  STRM        3.58  PRECIPITATION DEPTH
                  TRDA        1.00  TRANSPOSITIDN DRAINAGE AREA

  0 PI          PRECIPITATION PATTERN
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

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581 JD        INDEX STDRM ND. 3
                  STRM        3.49  PRECIPITATIDN DEPTH
                  TRDA        5.00  TRANSPDSITIDN DRAINAGE AREA

  0 PI          PRECIPITATION PATTERN
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

582 JD INDEX STORM NO. 4

STRM 3.38 PRECIPITATIDN DEPTH

TRDA 10.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

583 JD INDEX STDRM ND. 5

STRM 3.24 PRECIPITATION DEPTH

TRDA 30.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATIDN PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00		

584 JD INDEX STDRM ND. 6

STRM 3.10 PRECIPITATION DEPTH

TRDA 60.00 TRANSPDSITIDN DRAINAGE AREA

0 PI PRECIPITATIDN PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

585 JD INDEX STORM ND. 7

STRM 3.05 PRECIPITATIDN DEPTH

TRDA 90.00 TRANSPDSITION ORAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

586 JD INOEX STORM NO. 8

STRM 3.00 PRECIPITATION OEPTH

TRDA 120.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00		

587 JD INOEX STDRM ND. 9

STRM 2.97 PRECIPITATIDN DEPTH

TRDA 150.00 TRANSPOSITION ORAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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HYDROGRAPH MULTIPLIED BY .20

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WARNING --- ROUTED OUTFLOW (308.) IS GREATER THAN MAXIMUM OUTFLOW (251.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (260.) IS GREATER THAN MAXIMUM OUTFLOW (251.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (260.) IS GREATER THAN MAXIMUM OUTFLOW (251.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (309.) IS GREATER THAN MAXIMUM OUTFLOW (251.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (262.) IS GREATER THAN MAXIMUM OUTFLOW (251.) IN STORAGE-OUTFLOW TABLE

WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	73A	378.	13.33	96.	24.	12.	.95		
+	ROUTED TO	73ATB	355.	13.50	96.	24.	12.	.95		
+	HYDROGRAPH AT	73B	748.	12.08	68.	20.	10.	.43		
+	DIVERSION TO	73BRET	748.	12.08	68.	20.	10.	.43		
+	HYDROGRAPH AT	RET73B	4.	20.42	2.	1.	0.	.43		
+	2 COMBINED AT	CP73B	355.	13.50	96.	25.	12.	1.38		
+	ROUTED TO	73BTC	332.	13.83	95.	24.	12.	1.38		
+	HYDROGRAPH AT	73C	822.	12.25	94.	28.	14.	.58		
+	DIVERSION TO	73CRET	822.	12.25	70.	19.	9.	.58		
+	HYDROGRAPH AT	RET73C	501.	12.42	33.	10.	5.	.58		
+	2 COMBINED AT	CP73C	440.	12.42	124.	33.	16.	1.96		
+	ROUTED TO	73T74C	347.	14.08	122.	33.	16.	1.96		
+	HYDROGRAPH AT	74A	306.	13.33	77.	19.	9.	.75		
+	ROUTED TO	74ATB	300.	13.42	77.	19.	9.	.75		
+	HYDROGRAPH AT	74B	455.	12.25	55.	16.	8.	.33		
+	DIVERSION TO	74BRET	455.	12.25	33.	9.	4.	.33		
+	HYDROGRAPH AT	RET74B	389.	12.33	27.	8.	4.	.33		
+	2 COMBINED AT	CP74B	452.	12.33	103.	27.	13.	1.08		
+	ROUTED TO	74BTC	414.	12.42	103.	27.	13.	1.08		
+	HYDROGRAPH AT	74C	516.	12.25	62.	18.	9.	.34		
+	DIVERSION TO	74CRET	516.	12.25	45.	12.	6.	.34		
+	HYDROGRAPH AT	RET74C	297.	12.42	22.	6.	3.	.34		
+	3 COMBINED AT	CP74C	635.	12.50	237.	64.	31.	3.39		
+	ROUTED TO	74CT75	555.	12.75	236.	64.	31.	3.39		
+	HYDROGRAPH AT	10	216.	12.42	30.	9.	4.	.17		
+	DIVERSION TO	10RET	216.	12.42	30.	9.	4.	.17		
+	HYDROGRAPH AT	RET10	0.	.00	0.	0.	0.	.17		

+	RDUTEO TO	10T75	0.	.00	0.	0.	0.	.17
+	HYDROGRAPH AT	02B	359.	12.25	45.	15.	7.	.22
+	DIVERSION TD	02BRET	359.	12.25	43.	12.	6.	.22
+	HYDRDGRAPH AT	RET02B	19.	13.42	8.	3.	1.	.22
+	ROUTEO TO	2BT2	15.	14.50	8.	3.	1.	.22
+	HYDROGRAPH AT	02C	323.	12.33	44.	14.	7.	.24
+	OIVERSIDN TD	02CRET	323.	12.33	44.	14.	7.	.24
+	HYDROGRAPH AT	RET02C	0.	.00	0.	0.	0.	.24
+	2 COMBINED AT	CP2	15.	14.50	8.	3.	1.	.46
+	RDUTEO TO	2T1	14.	15.00	8.	3.	1.	.46
+	HYDRDGRAPH AT	01	520.	12.25	65.	21.	10.	.30
+	OIVERSION TD	01RET	520.	12.25	65.	21.	10.	.30
+	HYDRDGRAPH AT	RET01	0.	.00	0.	0.	0.	.30
+	HYOROGRAPH AT	05A	281.	12.33	36.	11.	5.	.19
+	DIVERSION TO	05ARET	281.	12.33	30.	8.	4.	.19
+	HYDROGRAPH AT	RET05A	109.	12.67	10.	3.	1.	.19
+	HYOROGRAPH AT	06A	203.	12.25	19.	6.	3.	.12
+	DIVERSIDN TO	02BRET	203.	12.25	19.	5.	2.	.12
+	HYOROGRAPH AT	RET06A	2.	14.83	1.	1.	0.	.12
+	RDUTED TO	6AT1	2.	16.08	1.	1.	0.	.12
+	4 COMBINED AT	CP1	120.	12.67	17.	6.	3.	1.07
+	RDUTED TO	1T3	61.	13.00	15.	6.	3.	1.07
+	HYOROGRAPH AT	03	454.	12.25	58.	18.	9.	.25
+	DIVERSION TO	03RET	454.	12.25	58.	18.	9.	.25
+	HYDROGRAPH AT	RET03	0.	.00	0.	0.	0.	.25
+	2 CDMBINEO AT	CP3	61.	13.00	15.	6.	3.	1.33
+	RDUTED TD	3T7A	23.	13.92	14.	6.	3.	1.33
+	HYDROGRAPH AT	5B	319.	12.17	31.	9.	4.	.16
+	DIVERSIDN TO	05BRET	319.	12.17	23.	6.	3.	.16
+	HYDRDGRAPH AT	RET05B	182.	12.33	11.	3.	1.	.16
+	RDUTED TO	5BT7A	112.	12.42	11.	3.	1.	.16
+	HYDROGRAPH AT	07B	175.	12.25	19.	6.	3.	.10
+	DIVERSIDN TO	07BRET	175.	12.25	19.	6.	3.	.10
+	HYDRDGRAPH AT	RET07B	0.	.00	0.	0.	0.	.10
+	ROUTED TD	7BT7A	0.	.00	0.	0.	0.	.10
+	3 COMBINED AT	CP7A	112.	12.42	23.	9.	4.	1.58
	RDUTED TD							

+		7AT12	78.	12.67	21.	9.	4.	1.58
+	HYDROGRAPH AT	12	234.	12.17	24.	7.	3.	.13
+	OIVERSION TO	12RET	234.	12.17	19.	5.	2.	.13
+	HYDRDGRAPH AT	RET12	107.	12.42	7.	2.	1.	.13
+	HYOROGRAPH AT	75	102.	12.67	17.	4.	2.	.51
+	3 CDMBINEO AT	CP12	202.	12.67	43.	15.	7.	2.22
+	ROUTED TD	12T13	191.	12.75	42.	15.	7.	2.22
+	HYOROGRAPH AT	08	690.	12.58	112.	34.	17.	.64
+	DIVERSIDN TO	08RET	690.	12.58	90.	24.	12.	.64
+	HYOROGRAPH AT	RET08	334.	12.92	34.	10.	5.	.64
+	RDUTED TO	8T9B	262.	13.08	33.	10.	5.	.64
+	HYOROGRAPH AT	09B	160.	12.17	14.	4.	2.	.09
+	OIVERSION TO	09BRET	160.	12.17	14.	4.	2.	.09
+	HYDRDGRAPH AT	RET09B	0.	.00	0.	0.	0.	.09
+	2 COMBINEO AT	CP9B	262.	13.08	33.	10.	5.	.73
+	RDUTED TO	9BT9A	198.	13.17	33.	10.	5.	.73
+	HYOROGRAPH AT	06B	186.	12.25	19.	6.	3.	.10
+	DIVERSION TO	06BRET	186.	12.25	16.	4.	2.	.10
+	HYDROGRAPH AT	RET06B	60.	12.50	5.	2.	1.	.10
+	ROUTEO TO	6BT9A	31.	12.75	5.	2.	1.	.10
+	HYDRDGRAPH AT	09A	92.	12.33	11.	3.	2.	.06
+	OIVERSION TO	09ARET	92.	12.33	11.	3.	2.	.06
+	HYDRDGRAPH AT	RET09A	0.	.00	0.	0.	0.	.06
+	3 COMBINED AT	CP9A	213.	13.17	38.	12.	6.	.90
+	RDUTEO TO	9AT11	200.	13.25	38.	12.	6.	.90
+	HYDROGRAPH AT	11B	158.	12.25	20.	6.	3.	.11
+	DIVERSION TO	11BRET	158.	12.25	20.	6.	3.	.11
+	HYDROGRAPH AT	RET11B	3.	16.25	2.	1.	0.	.11
+	2 COMBINED AT	CP11	200.	13.25	39.	12.	6.	1.00
+	RDUTED TO	11T13	170.	13.33	38.	12.	6.	1.00
+	HYDROGRAPH AT	13	351.	12.42	47.	15.	7.	.28
+	DIVERSION TO	13RET	351.	12.42	43.	12.	6.	.28
+	HYDRDGRAPH AT	RET13	38.	13.00	9.	3.	1.	.28
+	3 COMBINED AT	CP13	234.	13.33	81.	28.	14.	3.51
+	RDUTED TO	13T75	230.	13.42	80.	28.	14.	3.51
+	HYOROGRAPH AT	11A	273.	12.42	42.	14.	7.	.23
+	DIVERSION TO	11ARET	273.	12.42	40.	11.	5.	.23

+	HYOROGRAPH AT	RET11A	17.	13.75	7.	3.	1.	.23
+	ROUTED TD	11AT75	15.	14.00	7.	3.	1.	.23
+	HYOROGRAPH AT	14	189.	12.08	18.	6.	3.	.08
+	DIVERSIDN TO	14RET	189.	12.08	14.	4.	2.	.08
+	HYOROGRAPH AT	RET14	53.	12.17	7.	2.	1.	.08
+	5 COMBINEO AT	CP75	650.	12.75	300.	89.	43.	7.38
+	HYDROGRAPH AT	77A	556.	13.75	174.	43.	21.	1.74
+	ROUTEO TO	77ATB	525.	13.83	173.	43.	21.	1.74
+	HYDRDGRAPH AT	77B	542.	12.17	48.	14.	7.	.35
+	OIVERSION TD	77BRET	529.	12.08	31.	8.	4.	.35
+	HYDROGRAPH AT	RET77B	455.	12.25	20.	6.	3.	.35
+	2 COMBINED AT	CP77B	529.	13.83	191.	49.	23.	2.09
+	ROUTEO TO	77BTC	503.	14.08	189.	49.	23.	2.09
+	HYDROGRAPH AT	77C	383.	12.33	46.	14.	7.	.28
+	OIVERSION TO	77CRET	383.	12.33	35.	9.	5.	.28
+	HYDROGRAPH AT	RET77C	204.	12.58	15.	4.	2.	.28
+	2 COMBINED AT	C77C	511.	14.08	202.	53.	25.	2.37
+	RDUTEO TO	77CT78	494.	14.42	198.	53.	25.	2.37
+	HYOROGRAPH AT	78A	601.	13.75	188.	47.	23.	1.88
+	RDUTEO TO	78ATB	520.	14.42	187.	47.	23.	1.88
+	HYOROGRAPH AT	78B	598.	12.25	62.	17.	8.	.40
+	2 COMBINEO AT	C78B	608.	12.25	245.	64.	31.	2.28
+	ROUTED TD	78BTC	501.	14.75	245.	64.	31.	2.28
+	HYOROGRAPH AT	78C	494.	12.17	44.	11.	5.	.29
+	DIVERSION TO	78CRET	51.	11.75	3.	1.	0.	.29
+	HYDROGRAPH AT	RET78C	494.	12.17	42.	11.	5.	.29
+	2 CDMBINED AT	C78C	821.	12.17	284.	74.	35.	2.56
+	2 CDMBINED AT	C78C2	947.	14.58	467.	124.	59.	4.93
+	RDUTED TO	78CT79	936.	14.75	463.	124.	59.	4.93
+	HYDRDGRAPH AT	20	382.	12.42	52.	15.	7.	.27
+	DIVERSION TD	20RET	382.	12.42	52.	14.	7.	.27
+	HYDRDGRAPH AT	RET20	6.	15.42	4.	1.	1.	.27
+	2 CDMBINED AT	CP22B	936.	14.75	464.	124.	60.	5.20
+	HYDROGRAPH AT	16	197.	12.17	18.	5.	3.	.10
+	DIVERSIDN TD	16RET	197.	12.17	14.	4.	2.	.10
+	HYDROGRAPH AT	RET16	57.	12.42	5.	1.	1.	.10
+	HYDRDGRAPH AT	18	469.	12.25	51.	15.	7.	.32

	DIVERSION TO							
+		18RET	469.	12.25	47.	12.	6.	.32
	HYDROGRAPH AT							
+		RET18	44.	12.83	8.	3.	1.	.32
	ROUTED TO							
+		18T19	33.	12.92	8.	3.	1.	.32
	2 COMBINED AT							
+		CP19A	57.	12.42	13.	4.	2.	.42
	HYDROGRAPH AT							
+		19	271.	12.17	28.	8.	4.	.14
	DIVERSION TO							
+		19RET	271.	12.17	21.	6.	3.	.14
	HYDROGRAPH AT							
+		RET19	126.	12.33	10.	3.	1.	.14
	HYDROGRAPH AT							
+		17	169.	12.33	21.	7.	3.	.14
	DIVERSION TO							
+		17RET	169.	12.33	21.	6.	3.	.14
	HYDROGRAPH AT							
+		RET17	1.	23.00	0.	0.	0.	.14

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

NOAA Atlas Precipitation Data

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Arizona 33.3325 N 111.62 W 1420 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Mon Oct 22 2007

Confidence Limits | Seasonality | Location Maps | Other Info. | GIS data | Maps | Help | D

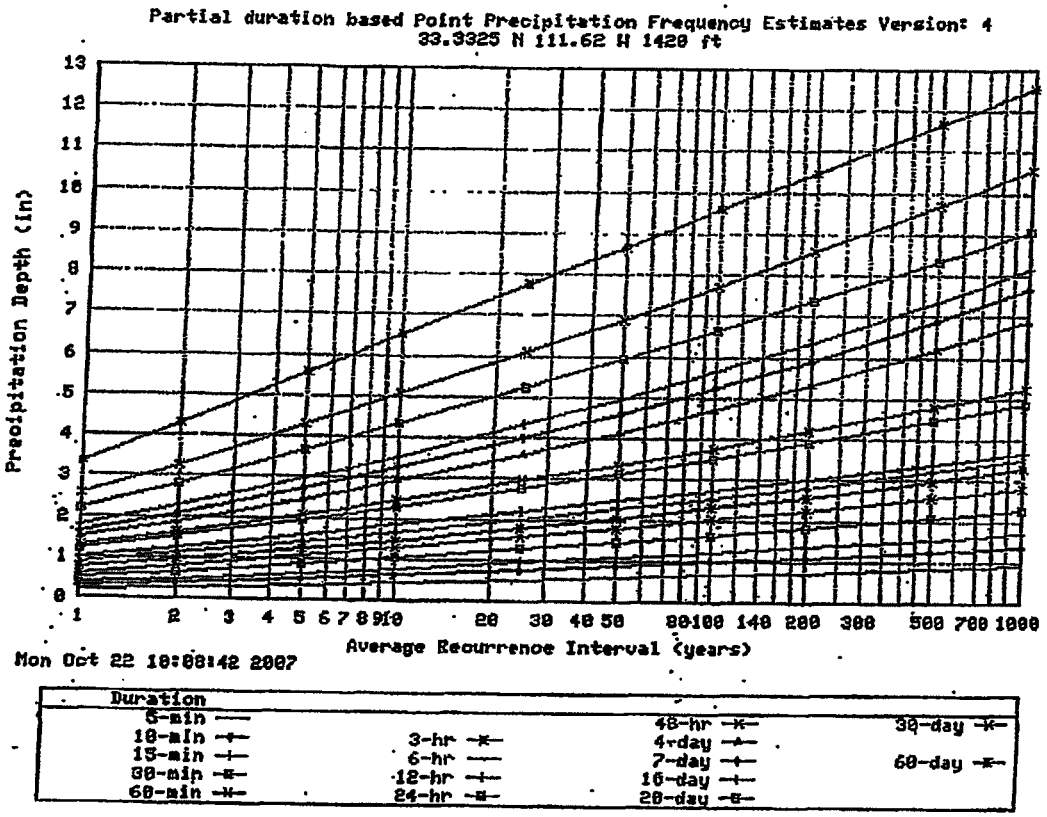
Precipitation Frequency Estimates (inches)

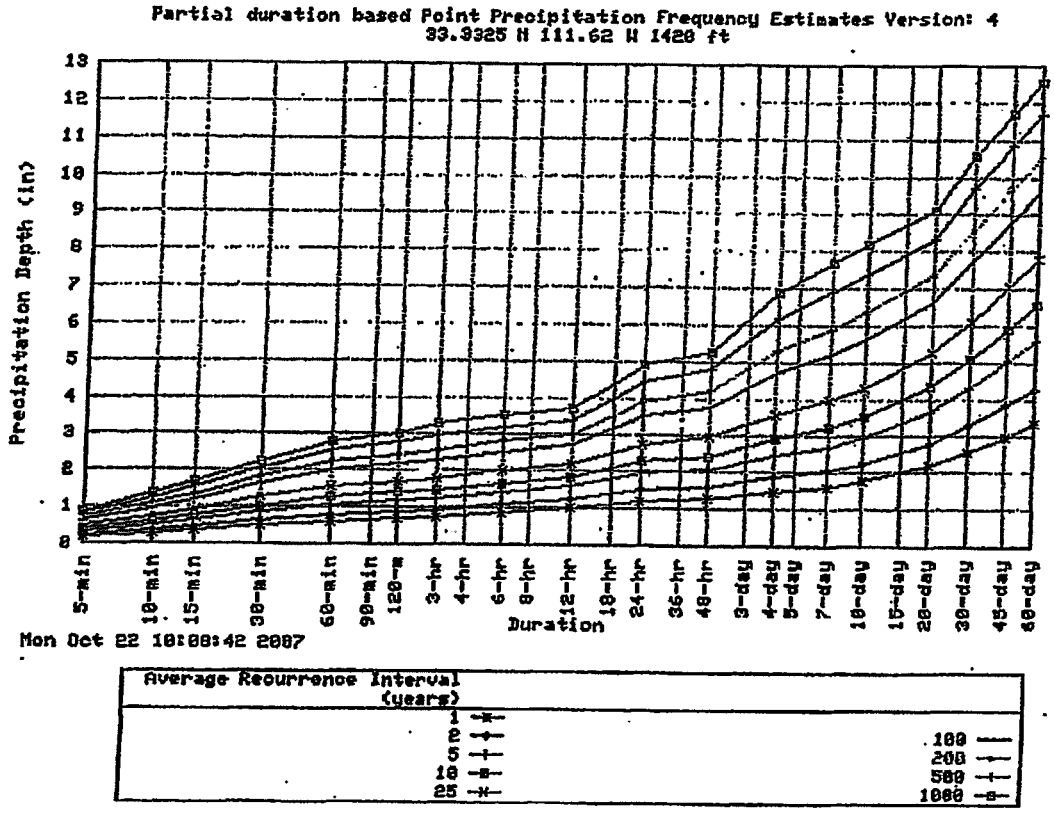
ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.19	0.29	0.36	0.48	0.60	0.68	0.73	0.88	0.99	1.21	1.27	1.47	1.62	1.77	2.19	2.56	2.99	3.33
2	0.25	0.38	0.47	0.63	0.78	0.89	0.93	1.11	1.26	1.52	1.61	1.87	2.07	2.25	2.81	3.28	3.84	4.28
5	0.34	0.51	0.64	0.85	1.06	1.18	1.22	1.42	1.58	1.95	2.08	2.45	2.71	2.96	3.68	4.29	5.02	5.58
10	0.40	0.61	0.76	1.03	1.27	1.40	1.45	1.66	1.84	2.29	2.44	2.92	3.24	3.52	4.35	5.06	5.90	6.53
25	0.50	0.76	0.94	1.26	1.56	1.71	1.77	2.00	2.19	2.75	2.95	3.59	3.98	4.32	5.25	6.10	7.05	7.76
50	0.57	0.86	1.07	1.44	1.78	1.95	2.03	2.26	2.46	3.12	3.35	4.13	4.59	4.96	5.94	6.91	7.93	8.68
100	0.64	0.97	1.21	1.63	2.01	2.19	2.30	2.54	2.74	3.51	3.77	4.70	5.24	5.64	6.65	7.73	8.81	9.60
200	0.71	1.09	1.35	1.81	2.24	2.44	2.58	2.82	3.02	3.90	4.20	5.31	5.92	6.36	7.37	8.57	9.69	10.49
500	0.81	1.24	1.53	2.06	2.56	2.78	2.97	3.21	3.40	4.45	4.79	6.17	6.89	7.36	8.35	9.70	10.84	11.66
1000	0.89	1.35	1.68	2.26	2.79	3.04	3.28	3.52	3.69	4.88	5.25	6.87	7.68	8.17	9.10	10.57	11.71	12.53

Text version of table

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

MESA PROVING GROUNDS ONSITE PRECIPITATION DEPTHS


Partial duration based Point Precipitation Frequency Estimates Version: 4
33.3325 N 111.62 W 1420 ft
Precipitation Depth (in)
Average Recurrence Interval (years)
Mon Oct 22 18:08:42 2007
Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
48-hr
4-day
7-day
10-day
20-day
30-day
60-day



Confidence Limits -

*** Upper bound of the 90% confidence interval**
Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.23	0.35	0.44	0.59	0.73	0.82	0.89	1.03	1.14	1.36	1.42	1.62	1.79	1.95	2.42	2.81	3.29	3.65
2	0.30	0.46	0.57	0.77	0.96	1.06	1.14	1.31	1.44	1.72	1.81	2.07	2.28	2.48	3.10	3.60	4.22	4.70
5	0.41	0.62	0.77	1.04	1.29	1.41	1.49	1.67	1.81	2.19	2.33	2.70	2.99	3.25	4.05	4.70	5.51	6.12
10	0.49	0.75	0.93	1.25	1.54	1.68	1.76	1.95	2.10	2.57	2.74	3.22	3.57	3.86	4.79	5.54	6.48	7.16
25	0.60	0.91	1.13	1.52	1.88	2.04	2.14	2.33	2.49	3.09	3.30	3.94	4.38	4.73	5.77	6.68	7.75	8.52
50	0.68	1.04	1.29	1.74	2.15	2.32	2.44	2.63	2.79	3.50	3.75	4.54	5.05	5.43	6.54	7.56	8.71	9.53
100	0.77	1.17	1.45	1.95	2.42	2.61	2.76	2.95	3.11	3.93	4.22	5.18	5.76	6.18	7.33	8.48	9.69	10.55
200	0.86	1.30	1.61	2.17	2.69	2.90	3.09	3.28	3.43	4.38	4.71	5.86	6.53	6.97	8.13	9.41	10.67	11.55
500	0.98	1.49	1.84	2.48	3.07	3.30	3.56	3.74	3.88	5.01	5.40	6.83	7.62	8.11	9.24	10.69	11.98	12.88
1000	1.07	1.63	2.02	2.72	3.36	3.63	3.94	4.11	4.24	5.53	5.95	7.63	8.53	9.02	10.11	11.71	12.99	13.88

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

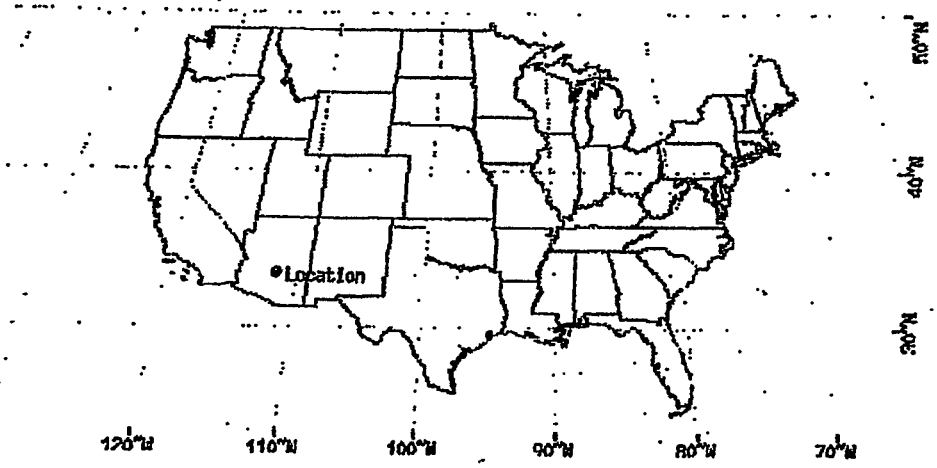
*** Lower bound of the 90% confidence interval**

Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.16	0.24	0.30	0.41	0.50	0.58	0.61	0.76	0.87	1.08	1.14	1.34	1.48	1.61	1.99	2.33	2.72	3.04
2	0.21	0.32	0.40	0.53	0.66	0.75	0.79	0.96	1.10	1.37	1.44	1.70	1.88	2.06	2.55	2.98	3.49	3.90
5	0.28	0.43	0.53	0.71	0.88	0.99	1.03	1.22	1.39	1.74	1.86	2.22	2.46	2.69	3.34	3.90	4.56	5.08
10	0.34	0.51	0.63	0.85	1.05	1.17	1.21	1.42	1.60	2.04	2.18	2.64	2.93	3.19	3.93	4.60	5.35	5.93
25	0.41	0.62	0.76	1.03	1.27	1.41	1.46	1.69	1.88	2.43	2.61	3.23	3.58	3.90	4.73	5.52	6.38	7.03
50	0.46	0.70	0.86	1.16	1.44	1.58	1.64	1.88	2.09	2.73	2.94	3.69	4.10	4.44	5.33	6.22	7.14	7.83
100	0.51	0.77	0.96	1.29	1.59	1.75	1.82	2.07	2.29	3.04	3.27	4.17	4.64	5.01	5.94	6.93	7.90	8.62
200	0.56	0.84	1.05	1.41	1.75	1.91	2.01	2.26	2.49	3.34	3.60	4.66	5.20	5.60	6.54	7.63	8.63	9.38
500	0.62	0.94	1.16	1.57	1.94	2.12	2.25	2.51	2.73	3.74	4.03	5.34	5.96	6.40	7.33	8.55	9.58	10.35
1000	0.66	1.00	1.25	1.68	2.08	2.27	2.42	2.68	2.92	4.04	4.35	5.88	6.57	7.03	7.92	9.23	10.28	11.05

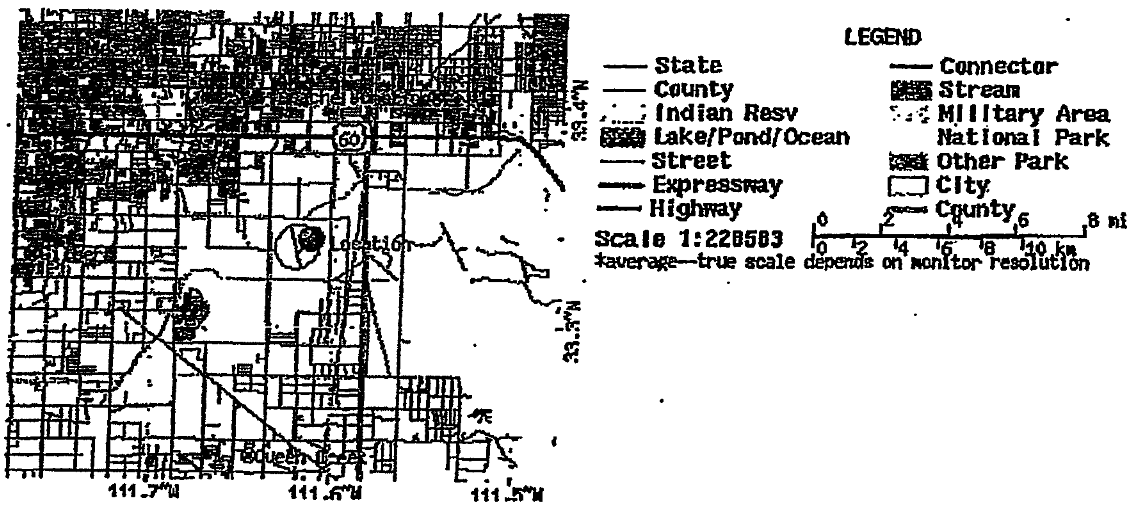
* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.
** These precipitation frequency estimates are based on a partial duration maxima series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

Maps -



These maps were produced using a direct map request from the U.S. Census Bureau Mapping and Cartographic Resources Tiger Map Server.

Please read disclaimer for more information.



Other Maps/Photographs -

View USGS digital orthophoto quadrangle (DOQ) covering this location from TerraServer; USGS Aerial Photograph may also be available
from this site. A DOQ is a computer-generated image of an aerial photograph in which image displacement caused by terrain relief and camera tilts has been removed. It combines the image characteristics of a photograph with the geometric qualities of a map. Visit the USGS for more information.

Watershed/Stream Flow Information -

Find the Watershed for this location using the U.S. Environmental Protection Agency's site.

Climate Data Sources -

Precipitation frequency results are based on data from a variety of sources, but largely NCDC. The following links provide general information about observing sites in the area, regardless of if their data was used in this study. For detailed information about the stations used in this study, please refer to our documentation.

Using the National Climatic Data Center's (NCDC) station search engine, locate other climate stations within:

+/-30 minutes ...OR... +/-1 degree of this location (33.3325/-111.62). Digital ASCII data can be obtained directly from NCDC.

Find Natural Resources Conservation Service (NRCS) SNOTEL (SNOwpack TELemetry) stations by visiting the Western Regional Climate Center's state-specific SNOTEL station maps.

Hydrometeorological Design Studies Center
DOC/NOAA/National Weather Service
1325 East-West Highway
Silver Spring, MD 20910
(301) 713-1669
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Interim Condition HEC-1 Sub-Basin Data

Table 1 - Interim Condition HEC-1 Sub-Basin Data

Description: Sub-basin data based on aerial photo and proposed topography

Location Eastmark - East Mesa, Arizona

Reference: DDMSW Version 5.3.0

ONSITE BASINS										
Sub-Basin ID	Basin Area (sq. ft.)	Basin Area (acres)	Basin Area (sq. mi)	Length (ft)	Length (mi)	Length +10% (mi)[1]	USGE (ft)	DSGE (ft)	Lca (ft)	Lca (mi)
1	8,346,275	191.60	0.299	4713	0.89	0.98	1445.0	1426.0	1354	0.26
2B	6,271,848	143.98	0.225	4910	0.93	1.02	1460.0	1441.0	1374	0.26
2C	6,627,622	152.15	0.238	5421	1.03	1.13	1460.0	1438.0	2225	0.42
3	7,090,741	162.78	0.254	4986	0.94	1.03	1432.0	1412.0	1207	0.23
5A	5,237,811	120.24	0.188	4356	0.83	0.91	1437.0	1425.0	2073	0.39
5B	4,357,933	100.04	0.156	3095	0.59	0.65	1423.0	1409.0	640	0.12
6A	3,455,521	79.33	0.124	3280	0.62	0.68	1446.0	1429.0	1169	0.22
6B	2,865,742	65.79	0.103	2885	0.55	0.61	1427.0	1417.0	1126	0.21
7B	2,782,823	63.88	0.100	3233	0.61	0.67	1419.0	1405.0	1350	0.26
8	17,961,468	412.34	0.644	7230	1.37	1.51	1444.0	1415.0	4310	0.82
9A	1,707,475	39.20	0.061	3978	0.75	0.83	1419.0	1402.0	2239	0.42
9B	2,441,269	56.04	0.088	2512	0.48	0.53	1422.0	1406.0	1168	0.22
10	4,768,642	109.47	0.171	5320	1.01	1.11	1444.0	1423.0	2970	0.56
11A	6,473,105	148.60	0.232	6041	1.14	1.25	1422.0	1398.0	2740	0.52
11B	3,044,977	69.90	0.109	4410	0.84	0.92	1420.0	1392.0	1650	0.31
12	3,548,520	81.46	0.127	3051	0.58	0.64	1406.0	1392.0	982	0.19
13	7,935,617	182.18	0.285	4551	0.86	0.95	1407.0	1390.0	2868	0.54
14	2,169,297	49.80	0.078	1560	0.30	0.33	1397.0	1389.0	350	0.07
16	2,747,312	63.07	0.099	2134	0.40	0.44	1425.0	1410.0	1100	0.21
17	3,919,629	89.98	0.141	4430	0.84	0.92	1412.0	1394.0	2485	0.47
18	8,921,616	204.81	0.320	3445	0.65	0.72	1435.0	1420.0	1761	0.33
19	3,855,367	88.51	0.138	2394	0.45	0.50	1420.0	1410.0	1082	0.20
20	7,514,092	172.50	0.270	4890	0.93	1.02	1430.0	1412.0	2361	0.45
75	14,121,606	324.19	0.507	6212	1.18	1.30	1416.0	1390.0	3596	0.68
Totals	**138,166,308**	**3171.84**	**4.957**							

OFFSITE BASINS (EAST OF SIGNAL BUTTE ROAD)								
Sub-Basin ID	Basin Area (sq. ft.)	Basin Area (acres)	Basin Area (sq. mi)	Length (ft)	Length (mi)	USGE (ft)	DSGE (ft)	Lca (mi)
73A	26,400,845	606.08	0.947	12144	2.30	1567.3	1487.0	1.00
73B	11,854,970	272.15	0.425	2957	0.56	1487.0	1470.0	0.28
73C	16,310,497	374.44	0.585	7022	1.33	1480.0	1450.0	0.30
74A	21,020,314	482.56	0.754	12672	2.40	1563.0	1461.7	1.00
74B	9,278,312	213.00	0.333	6917	1.31	1490.0	1459.0	0.41
74C	9,608,185	220.53	0.345	6442	1.22	1471.0	1440.0	0.40
77A	48,480,538	1,112.96	1.739	15312	2.90	1559.0	1468.8	1.50
77B	9,740,171	223.60	0.349	2957	0.56	1469.0	1453.0	0.26
77C	7,769,721	178.37	0.279	4013	0.76	1457.0	1439.0	0.51
78A	52,467,149	1,204.48	1.882	19536	3.70	1558.0	1452.6	2.10
78B	11,047,090	253.61	0.396	3168	0.60	1460.0	1441.0	0.40
78C	8,018,731	184.08	0.288	2640	0.50	1448.0	1432.1	0.30
79A	29,746,253	682.88	1.067	7524	1.43	1411.0	1390.0	0.82
Totals	**261,740,756**	**6008.74**	**9.389**					

Notes:
1) 10% was added to onsite watercourse lengths to account for future roadway curvature.

Interim Condition HEC-1 Soil Data

Table 2 - Post Developed HEC-1 - Soils Data

Description: Post Developed Soil Data

Location Eastmark - East Mesa, Arizona

Reference: NRCS Web Soil Survey
Aguila-Carefree Area Soil Survey

Sub-Basin ID	Soil Id	Soil Type	Area (acres)	Area (sq. mi.)
1	50	Estrella Loams	22.80	0.035
	75	Mohall Loam	25.69	0.040
	77	Mohall Clay Loam	143.32	0.224
		TOTAL	**191.81**	**0.299**
2B	50	Estrella Loams	3.36	0.005
	75	Mohall Loam	109.79	0.172
	77	Mohall Clay Loam	20.43	0.032
	1	Antho Sandy Loams	10.24	0.016
		TOTAL	**143.82**	**0.225**
2C	75	Mohall Loam	95.21	0.149
	77	Mohall Clay Loam	33.29	0.052
	50	Estrella Loams	18.83	0.029
	1	Antho Sandy Loams	4.59	0.007
		TOTAL	**151.92**	**0.237**
3	79	Mohall Clay	43.84	0.068
	50	Estrella Loams	1.21	0.002
	75	Mohall Loam	17.68	0.028
	77	Mohall Clay Loam	100.27	0.157
		TOTAL	**162.78**	**0.255**
5A	75	Mohall Loam	29.54	0.046
	77	Mohall Clay Loam	90.70	0.142
		TOTAL	**120.24**	**0.188**
5B	78	Mohall Clay Loam Calcareous Solum	4.18	0.007
	75	Mohall Loam	2.36	0.004
	77	Mohall Clay Loam	87.75	0.137
	79	Mohall Clay	5.77	0.009
		TOTAL	**100.04**	**0.157**
8A	75	Mohall Loam	59.32	0.093
	77	Mohall Clay Loam	19.98	0.031
		TOTAL	**79.30**	**0.124**
8B	75	Mohall Loam	22.22	0.035
	78	Mohall Clay Loam Calcareous Solum	43.29	0.068
	77	Mohall Clay Loam	0.28	0.0004
		TOTAL	**65.79**	**0.103**
7B	75	Mohall Loam	4.73	0.007
	50	Estrella Loams	1.99	0.003
	77	Mohall Clay Loam	58.31	0.088
	78	Mohall Clay Loam, Calcaraous Solum	0.68	0.001
		TOTAL	**63.69**	**0.099**
8	75	Mohall Loam	165.81	0.259
	50	Estrella Loams	46.32	0.072
	77	Mohall Clay Loam	133.99	0.209
	78	Mohall Clay Loam, Calcareous Solum	8.30	0.010
	1	Antho Sandy Loams	11.69	0.019
	112	Tremant Gravelly Sandy Loams	48.00	0.075
		TOTAL	**412.31**	**0.644**
9A	75	Mohall Loam	18.17	0.025
	78	Mohall Clay Loam, Calcareous Solum	23.03	0.036
		TOTAL	**39.20**	**0.061**
9B	112	Tremant Gravelly Sandy Loams	5.12	0.008
	75	Mohall Loam	40.17	0.063
	78	Mohall Clay Loam, Calcareous Solum	10.78	0.017
		TOTAL	**56.05**	**0.088**
10	112	Tremant Gravelly Sandy Loams	4.03	0.006
	77	Mohall Clay Loam	59.92	0.094
	2	Antho Gravelly Sandy Loams	11.28	0.018
	50	Estrella Loams	27.59	0.043
	115	Tremant-Antho Complex, 1% to 5% slopes	0.19	0.0003
	1	Antho Sandy Loams	6.48	0.010
		TOTAL	**109.47**	**0.171**
11A	75	Mohall Loam	15.64	0.024
	55	Gilman Loams	2.00	0.003
	112	Tremant Gravelly Sandy Loams	130.96	0.205
		TOTAL	**148.60**	**0.232**
11B	75	Mohall Loam	65.68	0.103
	112	Tremant Gravelly Sandy Loams	4.01	0.006
		TOTAL	**69.69**	**0.109**
12	50	Estrella Loams	37.77	0.059
	77	Mohall Clay Loam	36.99	0.081
	79	Mohall Clay	4.70	0.007
		TOTAL	**81.46**	**0.127**
13	75	Mohall Loam	151.78	0.237
	50	Estrella Loams	25.90	0.040
	78	Mohall Clay Loam Calcareous Solum	0.18	0.0003
	77	Mohall Clay Loam	4.33	0.007
		TOTAL	**182.17**	**0.284**

Sub-Basin ID	Soil Id	Soil Type	Area (acres)	Area (sq. mi.)
14	50	Estrella Loams	10.93	0.017
	75	Mohall Loam	15.68	0.025
	77	Mohall Clay Loam	10.30	0.016
	112	Tremant Gravelly Sandy Loams	12.71	0.020
		TOTAL	**49.60**	**0.078**
18	112	Tramant Gravelly Sandy Loams	10.78	0.017
	50	Estrella Loams	0.18	0.0003
	2	Mohall Loam	12.11	0.019
	78	Mohall Clay Loam	40.04	0.063
		TOTAL	**63.07**	**0.099**
17	112	Tremant Gravelly Sandy Loams	81.20	0.127
	55	Gilman Loams	7.32	0.011
	2	Antho Gravelly Sandy Loams	1.48	0.002
		TOTAL	**89.98**	**0.140**
18	115	Tramant-Antho Complex , 1% to 5% slopes	12.71	0.020
	2	Antho Gravelly Sandy Loams	18.77	0.029
	50	Estrella Loams	78.36	0.122
	1	Antho Sandy Loams	4.39	0.007
	78	Mohall Clay Loam, Calcareous Solum	48.50	0.078
	77	Mohall Clay Loam	30.10	0.047
	112	Tremant Gravelly Sandy Loams	11.99	0.019
		TOTAL	**204.82**	**0.320**
73A	N/A	No Data Available	606.08	0.947
		TOTAL	**606.08**	**0.947**
73B	1	Antho Sandy Loams	73.75	0.115
	50	Estrella Loams	10.81	0.017
	55	Gilman Loams	15.78	0.025
	75	Mohall Loam	62.59	0.098
	77	Mohall Clay Loam	80.28	0.125
	112	Tremant Gravelly Sandy Loams	29.14	0.046
		TOTAL	**272.18**	**0.426**
73C	1	Antho Sandy Loams	75.01	0.119
	50	Estrella Loams	85.37	0.133
	75	Mohall Loam	128.81	0.201
	77	Mohall Clay Loam	84.25	0.132
		TOTAL	**374.44**	**0.585**
74A	N/A	No Data Available	482.56	0.754
		TOTAL	**482.56**	**0.754**
74B	1	Antho Sandy Loams	112.04	0.175
	77	Mohall Clay Loam	97.34	0.152
	112	Tremant Gravelly Sandy Loams	3.62	0.006
		TOTAL	**213.00**	**0.333**
74C	1	Antho Sandy Loams	55.57	0.087
	50	Estrella Loams	11.47	0.018
	77	Mohall Clay Loam	136.29	0.213
	112	Tremant Gravelly Sandy Loams	16.78	0.026
	115	Tremant-Antho Complex, 1-5 %Slopes	0.44	0.001
		TOTAL	**220.53**	**0.345**
19	77	Mohall Clay Loam	35.77	0.056
	22	Contina Clay Loam	9.48	0.015
	50	Estrella Loams	4.07	0.006
	78	Mohall Clay Loam, Calcareous Solum	37.31	0.058
	112	Tremant Gravelly Sandy Loams	1.68	0.003
		TOTAL	**88.51**	**0.138**
20	22	Contina Clay Loam	115.12	0.180
	78	Mohall Clay Loam, Calcareous Solum	0.07	0.0001
	77	Mohall Clay Loam	11.71	0.018
	112	Tremant Gravelly Sandy Loams	45.80	0.071
		TOTAL	**172.50**	**0.269**
75	50	Estralla Loams	18.27	0.029
	112	Tremant Gravelly Sandy Loams	18.63	0.029
	77	Mohall Clay Loam	168.18	0.263
	79	Mohall Clay	119.04	0.186
		TOTAL	**324.10**	**0.507**

Sub-Basin ID	Soil Id	Soil Type	Area (acres)	Area (sq. mi.)
77A	N/A	No Data Available	1112.96	1.739
		TOTAL	**1112.96**	**1.739**
77B	1	Antho Sandy Loams	76.92	0.120
	77	Mohall Clay Loam	81.39	0.127
	112	Tremant Gravelly Sandy Loams	65.29	0.102
		TOTAL	**223.60**	**0.349**
77C	1	Antho Sandy Loams	4.48	0.007
	78	Mohall Clay Loam, Calcaraous Solum	8.70	0.014
	112	Tremant Gravelly Sandy Loams	92.80	0.145
	115	Tremant-Antho Complex, 1-5 %Slopes	0.11	0.0002
	77	Mohall Clay Loam	72.26	0.1129
		TOTAL	**178.35**	**0.279**
78A	N/A	No Data Available	1204.48	1.882
		TOTAL	**1204.48**	**1.882**
78B	77	Mohall Clay Loam	76.68	0.120
	22	Contina Clay Loam	69.81	0.109
	112	Tremant Gravelly Sandy Loams	107.33	0.168
		TOTAL	**253.80**	**0.397**
78C	22	Contina Clay Loam	128.67	0.201
	77	Mohall Clay Loam	2.78	0.004
	112	Tremant Gravelly Sandy Loams	52.85	0.082
		TOTAL	**184.08**	**0.287**

Interim Condition HEC-1 Land Use Data

Table 3 - Interim HEC-1 Land Use Data

Description: Land use data based on proposed development

Location Eastmark - East Mesa, Arizona

Reference: DDMSW Version 5.3.0

Sub-Basin ID	Basin Area (sq. ft.)	Basin Area (acres)	Besin Area (sq. mi)	DU	Parcel(s) within DU	DU Area (ec)	Land Use	Land Use Area (sq. ft.)	Land Use Area (acres)	Land Use Area (sq. mi.)	Kn
1	8,346,275	191.6	0.2994	DU5N	DU-5E	176.9	Industrial	7,705,764	176.9	0.276	0.040
				DU5N	DU-5E	2.8	Active Open Space	119,820	2.8	0.004	0.050
				---	---	11.9	General Transportation	518,364	11.9	0.019	0.035
2B	6,271,848	144.0	0.2250	DU6N	DU-6A	86.5	Industrial	3,767,940	86.5	0.135	0.040
				DU6N	DU-6B	50.7	Industrial	2,208,492	50.7	0.079	0.040
				---	---	6.8	General Trensportation	296,208	6.8	0.011	0.035
2C	6,627,622	152.1	0.2377	DU6N	DU-6C	129.0	Industrial	5,619,240	129.0	0.202	0.040
						6.3	Active Open Space	274,428	6.3	0.010	0.050
				---	---	16.8	Active Open Space	731,808	16.8	0.026	0.050
3	7,090,741	162.8	0.2544	DU5N	DU-5A	25.0	Industrial	1,089,000	25.0	0.039	0.040
				DU5N	DU-5B	47.4	Industrial	2,064,744	47.4	0.074	0.040
				DU5N	DU-5C	50.5	Industrial	2,199,780	50.5	0.079	0.040
				DU5N	DU-5D	25.0	Industriel	1,089,000	25.0	0.039	0.040
				---	---	5.7	Active Open Space	246,568	5.7	0.009	0.050
				---	---	9.2	General Transportation	400,752	9.2	0.014	0.035
5A	5,237,811	120.2	0.1878	DU 6S	6-4,6-5	34.8	Small Lot Residential (4-6 DU/Acre)	1,363,428	31.3	0.049	0.040
							General Transportetion	152,460	3.5	0.005	0.035
					6-6	18.9	Small Lot Residential (4-6 DU/Acre)	779,724	17.9	0.028	0.040
							Active Open Space	43,560	1.0	0.002	0.050
					6-9, 6-17	24.9	Small Lot Residentiel (4-6 DU/Acre)	1,084,644	24.9	0.039	0.040
					6-13 to 6-15	9.3	Medium Lot Residential (2-4 DU/Acre)	404,565	9.3	0.015	0.045
					6-16, 6-18	9.0	Medium Lot Residential (2-4 DU/Acre)	390,816	9.0	0.014	0.045
					6-19 to 6-23	21.5	Medium Lot Residential (2-4 DU/Acre)	935,699	21.5	0.034	0.045
					--	1.8	Active Open Space	30,492	0.7	0.001	0.050
5B	4,357,933	100.0	0.1563	DU 6S	6-13 to 6-15	17.7	Medium Lot Residential (2-4 DU/Acre)	771,012	17.7	0.028	0.045
					6-16, 6-18	27.7	Medium Lot Residential (2-4 DU/Acre)	1,206,612	27.7	0.043	0.045
					6-19 to 6-23	54.8	Medium Lot Residential (2-4 DU/Acre)	2,234,628	51.3	0.080	0.045
							Active Open Space	143,748	3.3	0.005	0.050
6A	3,455,521	79.3	0.1239	DU 6S	6-1/2	31.5	Medium Lot Residential (2-4 DU/Acre)	1,372,140	31.5	0.049	0.045
					6-7	19.6	Medium Lot Residential (2-4 DU/Acre)	853,776	19.6	0.031	0.045
					6-8	28.2	Large Lot Residential (1-2 DU/Acre)	1,228,392	28.2	0.044	0.045
6B	2,865,742	65.8	0.1028	DU 6S	6-10 to 6-12	65.1	Medium Lot Residential (2-4 DU/Acre)	1,825,164	41.9	0.065	0.045
					6-13 to 6-15		Small Lot Residential (4-6 DU/Acre)	1,010,592	23.2	0.036	0.040
					---	0.7	General Transportation	30,492	0.7	0.001	0.035
7B	2,782,823	63.9	0.0998	DU3/4	3/4-17	58.2	Medium Lot Residential (2-4 DU/Acre)	2,535,192	58.2	0.091	0.040
					3/4-19	5.7	Active Open Spece	248,292	5.7	0.009	0.050

Table 3 - Interim HEC-1 Land Use Data

Description: Land use data based on proposed development

Location Eastmark - East Mesa, Arizona

Reference: DDMSW Version 5.3.0

Sub-Basin ID	Basin Area (sq. ft.)	Basin Area (acres)	Basin Area (sq. mi)	DU	Parcel(s) within DU	DU Area (ac)	Land Use	Land Use Area (sq. ft.)	Land Use Area (acres)	Land Use Area (sq. mi.)	Kn
8	17,961,468	412.3	0.6442	DU6S	Parcel 6-3	17.9	General Commercial	779,724	17.9	0.028	0.035
				DU7	Parcels 7-1 through 7-27	387.9	Medium Lot Residential (2-4 DU/Acre)	9,243,432	212.2	0.332	0.045
							Small Lot Residential (4-6 DU/Acre)	7,217,892	165.7	0.259	0.040
							Institutional	304,920	7.0	0.011	0.040
							Active Open Space	130,680	3.0	0.005	0.050
				---	---	6.5	General Transportation	317,988	7.3	0.011	0.035
9A	1,707,475	39.2	0.0613	DU3/4	3/4-18	12.8	General Commercial	556,313	12.8	0.020	0.035
					3/4-19	17.0	Active Open Space	740,520	17.0	0.027	0.050
					--	6.6	Active Open Space	287,496	6.6	0.010	0.050
					---	2.8	General Transportation	122,450	2.8	0.004	0.035
9B	2,441,269	56.0	0.0875	DU7	7-22	56.0	Educational	344,124	7.9	0.012	0.055
					7-23		High Density Residential (10-15 DU/Acre)	871,200	20.0	0.031	0.030
					7-24		Institutional	261,360	6.0	0.009	0.040
					7-27		Active Open Space	962,676	22.1	0.035	0.050
10	4,768,642	109.5	0.1711	DU7		106.8	Medium Lot Residential (2-4 DU/Acre)	4,652,208	106.8	0.167	0.045
				---		2.7	General Transportation	119,210	2.7	0.004	0.035
11A	6,473,105	148.6	0.2322	DU3/4	3/4-1 to '3/4-3	55.0	Active Open Space	174,240	4.0	0.006	0.050
							Very High Density Residential (>15 DU/Acre)	479,160	11.0	0.017	0.025
							Very Small Lot Residential (>6 DU/Acre)	1,742,400	40.0	0.063	0.040
					3/4-6	37.2	Educational	1,620,432	37.2	0.058	0.055
					3/4-7		General Commercial	304,920	7.0	0.011	0.035
					3/4-8	8.5	Very High Density Residential (>15 DU/Acre)	370,260	8.5	0.013	0.025
				DU7	7-22	12.1	Educational	522,720	12.0	0.019	0.055
					7-25	2.5	Institutional	108,900	2.5	0.004	0.040
					7-26	5.5	General Commercial	239,580	5.5	0.009	0.035
				---	---	17.9	General Transportation	861,054	17.9	0.028	0.035
				---	---	3.0	Active Open Space	130,680	3.0	0.005	0.050
11B	3,044,977	69.9	0.1092	DU3/4	3/4-4	34.0	Small Lot Residential (4-6 DU/Acre)	1,481,040	34.0	0.053	0.040
					3/4-6	23.6	Educational	1,028,016	23.6	0.037	0.055
					3/4-7	12.3	Institutional	239,580	5.5	0.009	0.040
							General Commercial	296,208	6.8	0.011	0.025
12	3,548,520	81.5	0.1273	DU3/4	3/4-11	19.3	Medium Lot Residential (2-4 DU/Acre)	622,908	14.3	0.022	0.045
							General Commercial	217,800	5.0	0.008	0.025
					3/4-13	19.6	Medium Lot Residential (2-4 DU/Acre)	805,860	19.6	0.031	0.045
					3/4-14	24.1	Medium Lot Residential (2-4 DU/Acre)	1,049,796	24.1	0.038	0.045
					3/4-15	16.8	Medium Lot Residential (2-4 DU/Acre)	731,808	16.8	0.026	0.045
				--	--	1.7	General Transportation	74,052	1.7	0.003	0.035

Table 3 - Interim HEC-1 Land Use Data

Description: Land use data based on proposed development

Location Eastmark - East Mesa, Arizona

Reference: DDMSW Version 5.3.0

Sub-Basin ID	Besin Area (sq. ft.)	Basin Area (acres)	Basin Area (sq. mi)	DU	Parcel(s) within DU	DU Area (ac)	Land Use	Land Use Area (sq. ft.)	Land Use Area (ecres)	Land Use Area (sq. mi.)	Kn
13	7,935,617	182.2	0.2847	DU3/4	3/4-5	182.2	Small Lot Residential (4-6 DU/Acre)	1,964,556	45.1	0.070	0.040
					3/4-10		Generel Commercial	727,452	16.7	0.026	0.025
					3/4-11		Medium Lot Residential (2-4 DU/Acre)	470,448	10.8	0.017	0.045
					3/4-12		Medium Lot Residential (2-4 DU/Acre)	2,273,832	52.2	0.082	0.045
					3/4-13		Medium Lot Residential (2-4 DU/Acre)	1,224,036	28.1	0.044	0.045
					3/4-16		Medium Lot Residential (2-4 DU/Acre)	1,276,308	29.3	0.046	0.045
14	2,169,297	49.8	0.0778	DU3/4	3/4-11	49.8	General Office	326,700	7.5	0.012	0.035
							General Commercial	1,742,400	33.4	0.052	0.035
							Tourist and Vistor Accomodations	108,900	2.5	0.004	0.030
							General Trensportation	418,176	6.4	0.010	0.035
73A	26,400,845	606.1	0.9470	---		---	Passive Open Space	26,400,845	606.1	0.947	0.093
73B	11,854,970	272.2	0.4253	---		---	Smell Lot Residential (4-10 DU/Acre)	11,854,970	272.2	0.425	0.040
73C	16,310,497	374.4	0.5850	---		---	Small Lot Residentiel (4-10 DU/Acre)	16,310,497	374.4	0.585	0.040
74A	21,020,314	482.6	0.7541	---		---	Passive Open Space	21,020,314	482.6	0.754	0.095
74B	9,278,312	213.0	0.3328	---		---	Small Lot Residential (4-10 DU/Acre)	9,278,312	213.0	0.333	0.040
74C	9,606,165	220.5	0.3445	---		---	Small Lot Residential (4-10 DU/Acre)	9,606,165	220.5	0.345	0.040
16	2,747,312	63.1	0.0986	DU9	9-1	63.1	Medium Lot Residential (2-4 DU/Acre)	2,491,632	57.2	0.089	0.045
					---		Active Open Space	135,036	3.1	0.005	0.050
					---		General Transportation	121,968	2.8	0.004	0.035
17	3,919,629	90.0	0.1406	DU3S	3S-2	31.0	Medium Lot Residential (2-4 DU/Acre)	1,350,360	31.0	0.048	0.045
					3S-1, 3S-3	59.0	Small Lot Residentiel (4-6 DU/Acre)	2,570,040	59.0	0.092	0.040
18	8,921,616	204.8	0.3200	DU8	8-1 through 8-9	204.8	Medium Lot Residential (2-4 DU/Acre)	6,904,260	158.5	0.248	0.045
							Large Lot Residential (1-2 DU/Acre)	871,200	20.0	0.031	0.045
							Active Open Spece	927,828	21.3	0.033	0.050
							General Transportation	217,800	5.0	0.008	0.035
19	3,855,367	88.5	0.1383	DU9	9-2 through 9/4	88.5	Medium Lot Residential (2-4 DU/Acre)	2,121,372	72.8	0.114	0.045
							Institutional	540,144	11.2	0.018	0.040
							Active Open Space	100,188	2.3	0.004	0.050
							General Transportation	95,832	2.2	0.003	0.035
20	7,514,092	172.5	0.2695	DU8	8-9	18.7	Medium Lot Residentiel (2-4 DU/Acre)	596,772	13.7	0.021	0.045
							Active Open Space	108,900	2.5	0.004	0.050
							General Transportation	108,900	2.5	0.004	0.035
				DU9	9-4, 9-5, 9-6, 9-7	138.0	Medium Lot Residential (2-4 DU/Acre)	5,523,408	126.8	0.198	0.045
							Active Open Space	487,872	11.2	0.018	0.050
				---		15.8	General Transportation	688,248	15.8	0.025	0.035
77A	48,480,538	1113.0	1.7391	---	---	---	Passive Open Space	48,480,538	1113.0	1.739	0.092
77B	9,740,171	223.6	0.3494	---	---	---	Passive Open Space	3,985,740	91.5	0.143	0.050
							Medium Lot Residentiel (2-4 DU/Acre)	5,771,700	132.5	0.207	0.045
77C	7,769,721	178.4	0.2788	---	---	---	Medium Lot Residential (2-4 DU/Acre)	7,596,864	174.4	0.273	0.045
							Institutional	174,240	4.0	0.006	0.040

Interim Condition HEC-1 Routing Data

Table 4 - Interim HEC-1 Routing Data

Description: Routing paramaters based on proposed channels and drainage corridors

Location Eastmark - East Mesa, Arizona

Reference: DDMSW Version 5.3.0

Routing ID	N-Steps	Routing Method	LOB N	CHAN N	ROB N	Length (ft)	Slope (ft/ft)	RX1	RX2	LB	RX4	RX5	RB	RX7	RX8	RY1	RY2	LB	RY4	RY5	RB	RY7	RY8
74CT75	7	Normal Depth	0.030	0.013	0.030	10500	0.0038	0.0	15.0	16.5	25.0	33.0	41.5	43.0	58.0	6.50	6.50	5.80	0.00	0.00	5.60	5.50	5.50
10T75	1	Normal Depth	0.030	0.015	0.030	6320	0.0060	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
2BT2	12	Normal Depth	0.032	0.032	0.032	990	0.0031	0.0	1.0	2.0	3.0	2003.0	2004.0	2005.0	2006.0	1.00	0.75	0.50	0.00	0.00	0.50	0.75	1.00
2T1	7	Normal Depth	0.035	0.035	0.035	3031	0.0040	0.0	2.0	4.0	8.0	42.0	46.0	46.0	50.0	2.00	1.50	1.00	0.00	0.00	1.80	1.50	2.80
1T3	4	Normal Depth	0.035	0.035	0.035	2548	0.0051	0.0	2.0	4.0	8.0	42.0	46.0	48.0	50.0	2.00	1.50	1.00	0.00	0.00	1.00	1.50	2.80
3T7A	3	Normal Depth	0.035	0.035	0.035	4450	0.0055	0.0	50.0	95.0	125.0	150.0	280.0	440.0	620.0	3.00	2.00	1.00	0.00	0.00	1.00	2.00	3.00
5BT7A	1	Normal Depth	0.030	0.015	0.030	1093	0.0040	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.80	0.50	0.00	0.80	0.80	0.00	0.50	1.00
7BT7A	1	Normal Depth	0.030	0.015	0.030	1154	0.0026	0.0	7.5	8.0	38.0	43.0	73.0	73.5	81.0	0.80	0.50	0.00	0.60	0.80	0.00	0.50	0.80
7AT12	3	Normal Depth	0.030	0.015	0.030	2387	0.0051	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
6AT1	16	Normal Depth	0.030	0.015	0.030	3600	0.0011	0.0	17.0	23.0	28.5	48.5	65.5	71.0	84.0	1.07	0.90	0.90	0.00	1.15	0.00	0.90	1.78
6BT9A	3	Normal Depth	0.030	0.015	0.030	3123	0.0048	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
8T9B	2	Normal Depth	0.030	0.015	0.030	1410	0.0053	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
8AT11	1	Normal Depth	0.030	0.015	0.030	925	0.0065	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
9BT8A	1	Normal Depth	0.030	0.015	0.030	1736	0.0040	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
11T13	1	Normal Depth	0.030	0.015	0.030	1765	0.0040	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
11AT75	3	Normal Depth	0.030	0.015	0.030	1370	0.0051	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
12T13	3	Normal Depth	0.030	0.015	0.030	2600	0.0014	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	1.00	0.50	0.00	0.80	0.80	0.00	0.50	1.00
13T75	1	Normal Depth	0.030	0.015	0.030	1230	0.0018	0.0	17.5	18.0	57.0	73.0	112.0	112.5	130.0	2.00	1.00	0.50	0.00	0.00	0.50	1.00	2.00
18T18	1	Normal Depth	0.030	0.015	0.030	1040	0.0040	0.0	7.5	8.0	38.0	43.0	73.0	73.5	81.0	0.80	0.50	0.00	0.80	0.80	0.00	0.50	0.80
77CT78	4	Normal Depth	0.032	0.032	0.032	4435	0.0020	0.0	5.0	10.0	24.0	124.0	138.0	143.0	148.0	4.50	4.00	3.50	0.00	0.00	3.50	4.00	4.50
78CT78	2	Normal Depth	0.032	0.032	0.032	4215	0.0033	0.0	5.0	10.0	26.0	81.0	87.0	102.0	107.0	5.00	4.50	4.00	0.00	0.00	4.00	4.50	5.00

Interim Condition Onsite Retention Volume Summary

Table 5- Interim Condition Onsite Retention Volume Summary

Description: Calculation of Required Retention Volume Using the Retional Method
Location Eastmark
Reference: Drainage Design Menual for Maricope County, Vol. I, Hydrology

Known Values: Design storm: 100-yr, 2-hr 100-yr, 24-hr
Reinfall, D: 2.19 inches 3.51 inches

Calc. Values: V = DAC Where: V = Retention Volume Required
D = Depth of Rainfall (ft)
A = Aree of Wetershed Contributing
C = Runoff Coefficient

Retention (North of the Powerline Floodway)

Retention Basin	Retention Location	Sub-basin		Development Unit		Weighted "C_{100}"	Required Storm Event Retention	Volume Required (acre-feet)	Total Volume Required (acre-feet)	Volume Provided (acre-feet)	Total Volume Provided (acre-feet)	Modeled HEC-1 Retention Volume (acre-feet)
		Contributing Sub-basin	Contributing Sub-basin Aree (acres)	Contributing DUs	DU Aree Within Sub-basin (acres)							
RET01	DU 5N	1	191.6	DU-5E	178.8	0.90	100-Year, 24-Hour	50.43	50.43	--	--	50.43
				DU-5E	2.8							
				—	11.9							
RET02B[1]	DU 8N	2B	144	DU-8A	86.5	0.90	100-Year, 2-Hour	23.65	23.65	14.45	14.45	23.85
				DU-6B	50.7					--		
				—	6.8					--		
RET02C[6]	DU 8N	02C	152.1	DU-6C	129.0	0.88	100-Year, 24-Hour	29.50	29.50	--	--	29.50
				0	8.3					--		
				—	18.8					--		
RET03	DU 5N	3	182.8	DU-5A	25	0.88	100-Year, 24-Hour	42.38	42.38	--	--	42.38
				DU-5B	47.4					--		
				DU-5C	50.5					--		
				DU-5D	25					--		
				—	5.7					--		
				—	9.2					--		
RET05A	DU 6S	5A	120.2	6-4,6-6	34.8	0.77	100-Year, 2-Hour	4.89	15.68	--	--	15.68
				6-6	18.8	0.74		2.56				
				6-8, 6-17	24.9	0.89		8.23		--		
				6-13 to 6-15	8.3							
				--	8.0							
RET05B	DU 8S	5B	100.0	6-13 to 6-15	45.4	0.65	100-Year, 2-Hour	11.48	11.88	--	--	11.86
				6-18 to 6-23								
				--	54.8	0.65		0.38		--		
RET06A[3]	DU 8S	6A	79.3	6-1/2	79.3	0.65	100-Yeer, 2-Hour	9.40	9.40	10.28	10.28	10.28
				8-7								
				6-8								
RET06B	DU 6S	6B	65.8	6-10 to 6-12	41.8	0.89	100-Year, 2-Hour	8.29	8.29	0.00	0.00	8.29
				6-13 to 6-16	23.2							
				—	0.7							
RET07B	DU 3/4	7B	63.9	DU3/4	3/4-17	0.65	100-Year, 24-Hour	12.14	12.14	0.00	0.00	12.14
					3/4-18							
RET08[2]	DU 6S DU 7	8	412.3	Parcel 8-3	17.9	0.80	100-Year, 2-Hour	2.94	53.89	--	45.28	48.23
				Parcels 7-1 through 7-27	387.8	0.70		48.55		45.29		
				—	7.3	0.90		1.20				
RET09A	DU 3/4	9A	39.2	3/4-18	12.8	0.90	100-Year, 24-Hour	3.38	8.60	--	--	8.60
				3/4-18	17	0.85		3.25		--		
				--	8.8	0.85		1.28		--		
				—	2.8	0.90		0.73		--		
RET09B [4]	DU 7	9B	56.0	7-22	8.8	0.80	100-Year, 24-Hour	1.81	11.87	0.59	0.59	11.87
					1.0	0.80	100-Year, 2-Hour	0.15				
				7-23	20.0	0.65	100-Year, 24-Hour	4.87				
				7-24	6.0	0.65	100-Year, 2-Hour	0.93				
				7-27	22.1	0.65	100-Year, 24-Hour	4.21				
RET10[2]	DU 7	10	109.5	DU7	106.8	0.66	100-Year, 2-Hour	13.18	13.18	10.55	18.32	18.32
				—	2.7					7.77		
RET11A[5]	DU 3/4	11A	148.8	3/4-1 to '3/4-3	55.0	0.81	100-Yeer, 2-Hour	8.12	22.47	8.0	8.0	22.17
				3/4-8	37.2	0.80		5.44				
				3/4-7	0.0	0.80		1.15				
				3/4-8	8.5	0.80		1.41				
				7-22	12.1	0.80		1.75				
				7-25	2.5	0.65		0.38				
				7-26	5.5	0.90		0.81				
				--	20.9	0.88		3.31				
RET11B	DU 3/4	11B	88.8	3/4-4	34.0	0.75	100-Year, 2-Hour	4.65	10.07	5.92	5.92	11.34
				3/4-6	23.6	0.80		3.45		--		
				3/4-7	5.5	0.88		1.87		--		
RET12	DU 3/4	12	81.5	3/4-11	18.3	0.71	100-Year, 2-Hour	2.50	9.95	--	--	9.85
				3/4-13	18.6	0.65		2.32		--		
				3/4-14	24.1	0.65		2.87		--		
				3/4-15	18.8	0.85		1.99		--		
				--	1.7	0.80		0.27		--		

Table 5- Interim Condition Onsite Retention Volume Summary

Description: Calculation of Required Retention Volume Using the Rational Method
Location Eastmark
Reference: Drainage Design Manual for Maricope County, Vol. I, Hydrology

Known Values: Design storm: 100-yr, 2-hr 100-yr, 24-hr
Rainfall, D: 2.18 Inches 3.51 Inches

Calc. Values: V = DAC Where: V = Retention Volume Required
D = Depth of Rainfall (ft)
A = Area of Watershed Contributing
C = Runoff Coefficient

Retention North of the Powerline Floodway

Retention Basin	Retention Location	Sub-basin		Development Unit		Weighted "C_{100}"	Required Storm Event Retention	Volume Required (acre-feet)	Total Volume Required (acre-feet)	Volume Provided (acre-feet)	Total Volume Provided (acre-feet)	Modeled HEC-1 Retention Volume (acre-feet)
		Contributing Sub-basin	Contributing Sub-basin Area (acres)	Contributing DUs	DU Area Within Sub-basin (acres)							
RET13	DU 3/4	13	182.2	3/4-5 3/4-10 3/4-11 3/4-12 3/4-13 3/4-18	182.2	0.70	100-Year, 2-Hour	23.28	23.28	--	--	23.28
RET14	DU 3/4	14	49.8	3/4-11	49.8	0.88	100-Year, 2-Hour	8.09	8.08	--	--	8.09
							Total	**364.6**	**364.6**	**100.85**	**100.86**	**388.08**

1. Retention provided volume for RET02B was taken from the First Solar Finel Drainage Report, where only approximately half of 2B is developed.
2. Retention provided volumes for RET06 and RET10 were taken from DU7 and Ray Road Finel Drainage Reports and Improvement plans.
3. Retention provided volumes for RET06A was taken from DU8 South Final Drainage Reports and Improvement plans.
4. Required Retention for RET09B was determined to be the 100-year, 24 hour volume except for the existing Basis and Sequoia Pathfinder Acadamy schools and the existing daycare. The total acreege for these three existing developments within Subbasin 9B is approximetely 7 Acras. Thus, the required retention for RET09B includes 100-year, 24 hour volume for the future development of 49 Acres, and the 100-year, 2-hour volume from the existing schools and daycare encompassing approximately 7 Acres.
5. Retention provided volume for RET11A was taken from the 3/4-1 to 3/4-3 Improvement plans and final drainage report excluding the high density residential site located in the southeast corner; which is currently not designed.
8. RET02C-The required retention for the 100-yeer, 24-hour storm event was provided by the engineer for the end user. They incorporated infiltretion methods within HEC-1 which were based upon the layout of the proposed Site in lieu of using the retional method to calculate the required retention.

Retention (South of the Powerline Floodway)

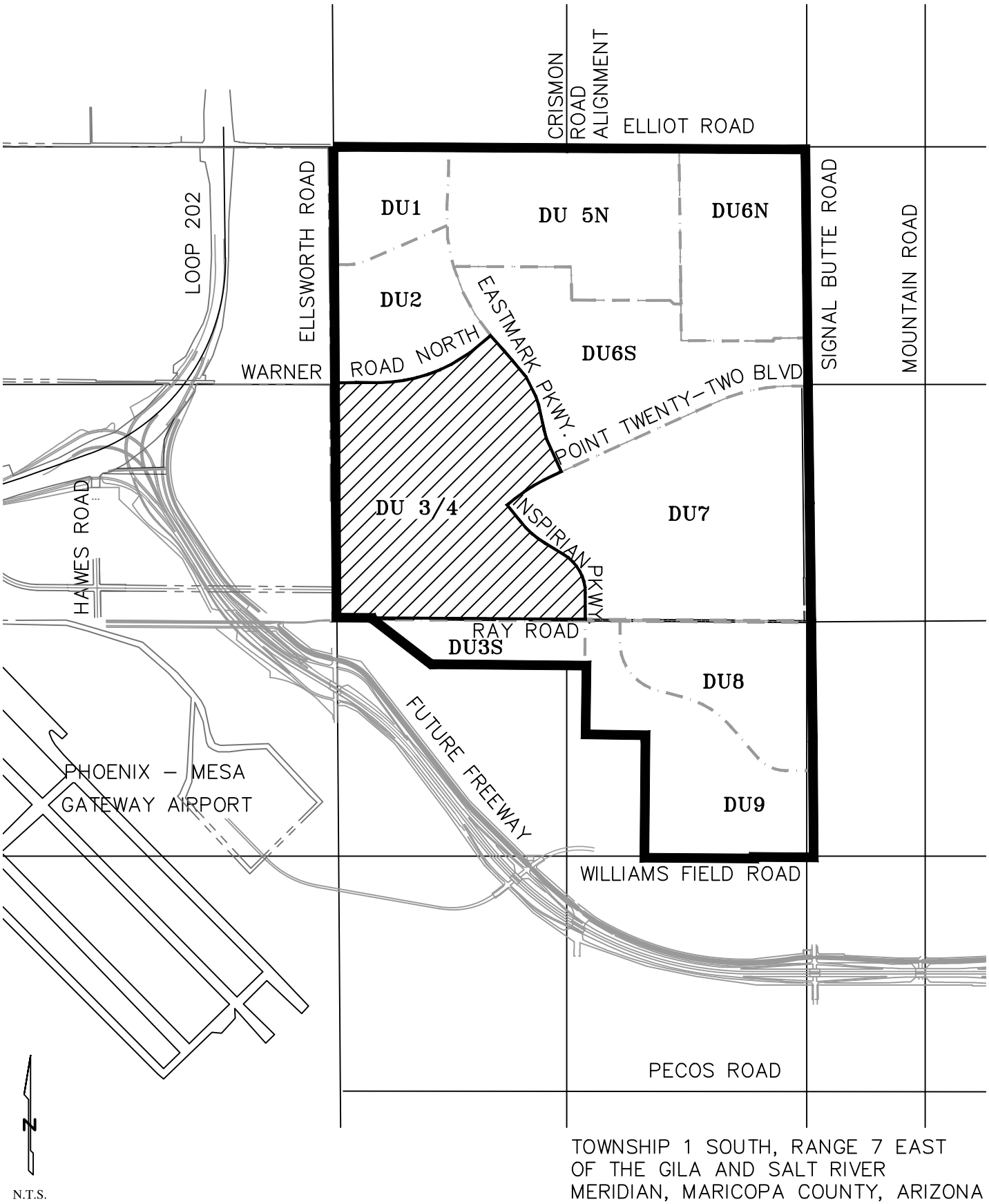
Retention Basin	Retention Location	Sub-basin		Development Unit		Weighted "C_{100}"	Required Storm Event Retention	Volume Required (acre-feet)	Total Volume Required (acre-feet)	Volume Provided (acre-feet)	Total Volume Provided (acre-feet)	Modeled HEC-1 Retention Volume (acre-feet)
		Contributing Sub-basin	Contributing Sub-basin Area (acres)	Contributing DUs	DU Area Within Sub-basin (acres)							
RET16	DU 9	16	63.1	DU9	63.1	0.66	100-Year, 2-Hour	7.8	7.8	--	--	7.60
RET17 [7]	DU 3S	17	90.0	3S-2	31.0	0.72	100-Year, 2-Hour	11.8	11.8	12.74	12.74	12.74
				3S-1, 3S-3	59.0							
RET18	DU 8	18	204.8	8-1 through 8-9	204.8	0.66	100-Year, 2-Hour	24.7	24.7	--	--	24.70
RET19[8]	DU 8	19	66.5	9-2 through 9/4	88.5	0.88	100-Year, 2-Hour	11.0	11.0	8.92	8.92	11.00
RET20[8]	DU 8 DU 9	20	172.5	8-8	18.7	0.68	100-Yeer, 2-Hour	2.3	21.3	--	25.76	28.06
				9-4, 9-5, 9-6, 9-7	138.0	0.65		16.4		25.76		
				---	15.8	0.90		2.8				
							Total	**76.4**	**78.4**	**48.42**	**48.42**	**84.10**

7. Retention provided volumes for RET17 was taken from DU3 South Final Drainage Reports and Improvement plans.
8. Retention provided volumes for RET19 and RET20 were taken from DU9 Final Drelnage Reports and Improvement plans.

Eastmark Required Retention Total =	**440.9**	**ac-ft**
Current Eastmark Provided Retention Total =	**149.3**	**ac-ft**
Current Eastmark Modeled Retention Total =	**450.2**	**ac-ft**

EXHIBIT 1

VICINITY MAP



N.T.S.

TOWNSHIP 1 SOUTH, RANGE 7 EAST
OF THE GILA AND SALT RIVER
MERIDIAN, MARICOPA COUNTY, ARIZONA

Z:\Eastmark\2017\1741706\Project Support\Reports\Sewer BOD\DU 3-4 MP Update\Exhibits\ 1741706-3-4 DU Vicinity Map.dwg - Aug 31,2017 1:36pm

NOT FOR CONSTRUCTION
OR RECORDING

EXHIBIT 1: VICINITY MAP

EASTMARK
MESA, ARIZONA

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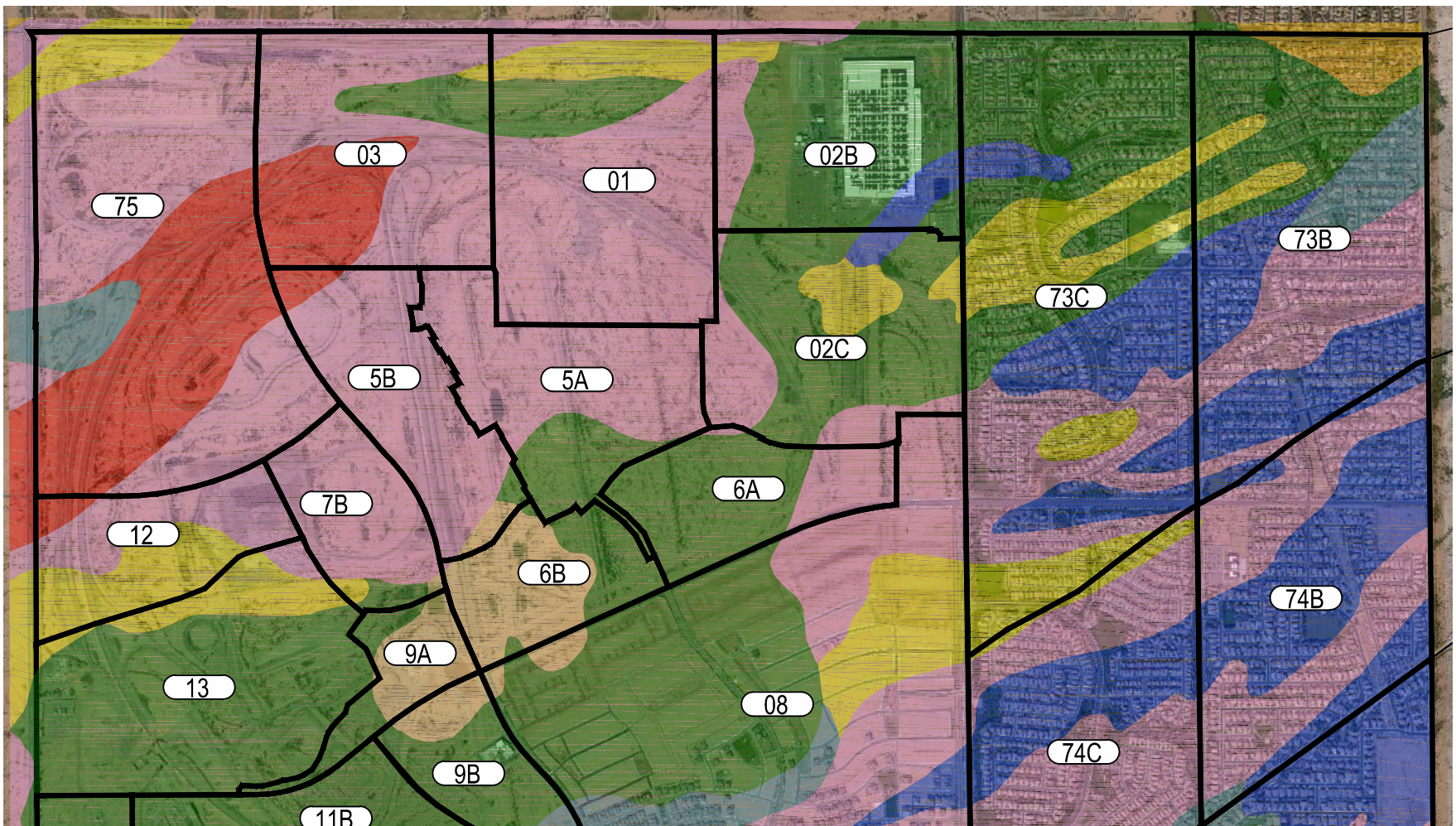
EXHIBIT 2

SOILS MAP



LEGEND

- Antho sandy loam
- Antho gravelly sandy loams
- Contine clay loam
- Estrella loams
- Gilman loams
- Mohall loams
- Mohall loam, calcareous solum
- Mohall clay loam
- Mohall clay loam, calcareous solum
- Mohall clay
- Tremant gravelly sandy loams
- Tremant-Antho complex, 1% to 5% slopes
- HEC-1 SUB-BASIN BOUNDARY
- 000 HEC-1 SUB-BASIN ID

N

1800 0 900 1800

Horz. 1 in. = 1800 ft.

NOT FOR CONSTRUCTION
OR RECORDING

EXHIBIT 2 - SOILS MAP

EASTMARK
MARICOPA COUNTY, ARIZONA

WOOD/PATEL
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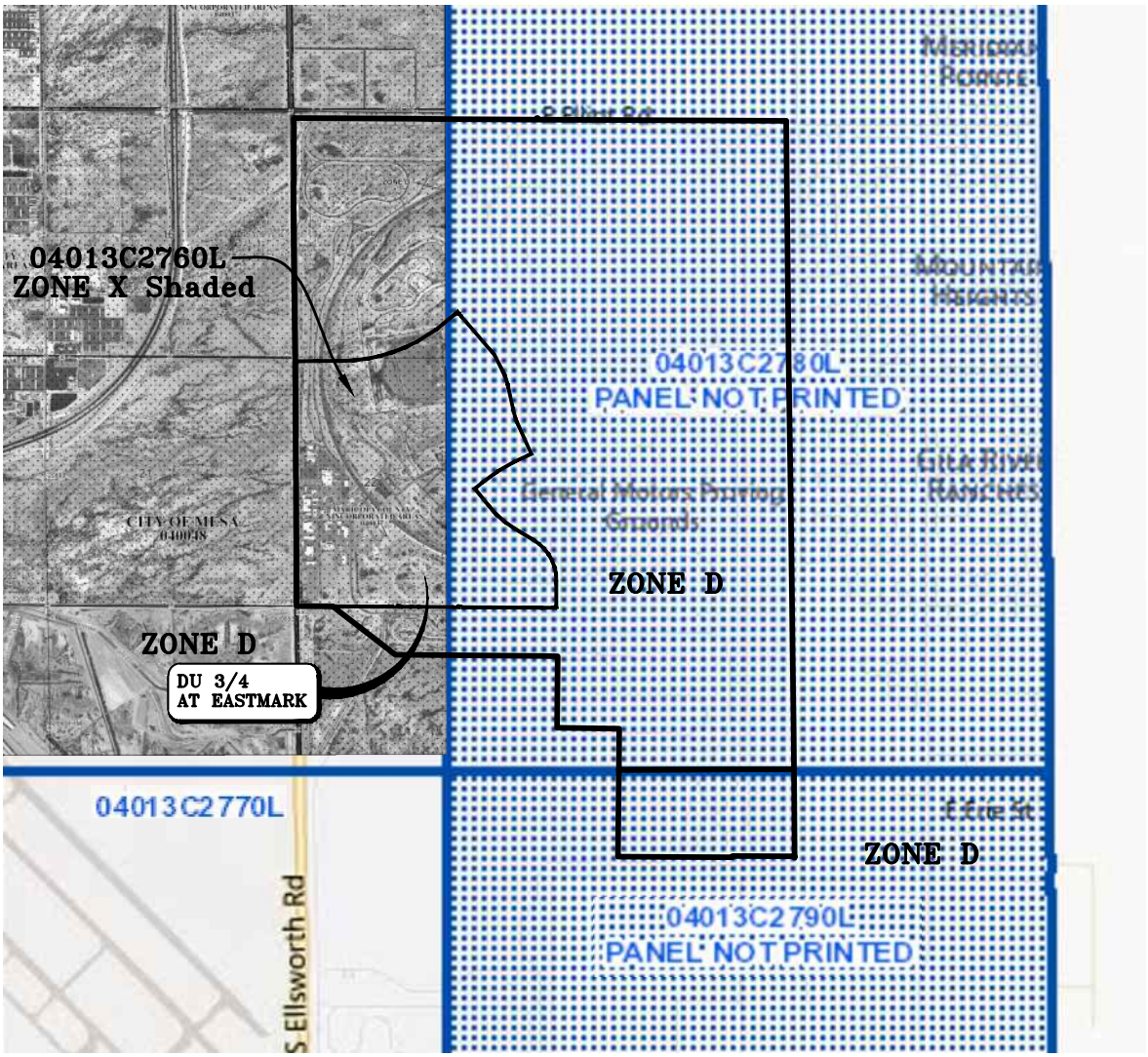
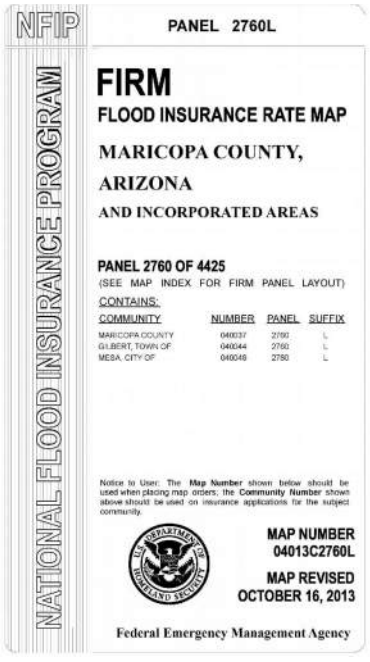
Z:\Eastmark\2017\1741708\Project Support\Reports\Drainage\DU 3-4 MP Update\Exhibits\ 4708-EX 2-Interim Soils Map.dwg - Sep 25,2017 3:45pm

EXHIBIT 3

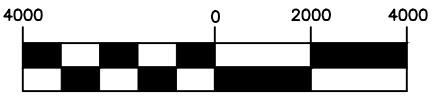
FLOOD INSURANCE RATE MAP





Zone "X" Shaded is defined by FEMA as follows:
Areas of 0.2% annual chance flood: areas of 1% 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.

Zone "D" is defined by FEMA as follows:
Areas in which flood hazards are undetermined.



1 inch = 4000ft.

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EXHIBIT 3: FEMA FIRM MAP

EASTMARK
MESA, ARIZONA

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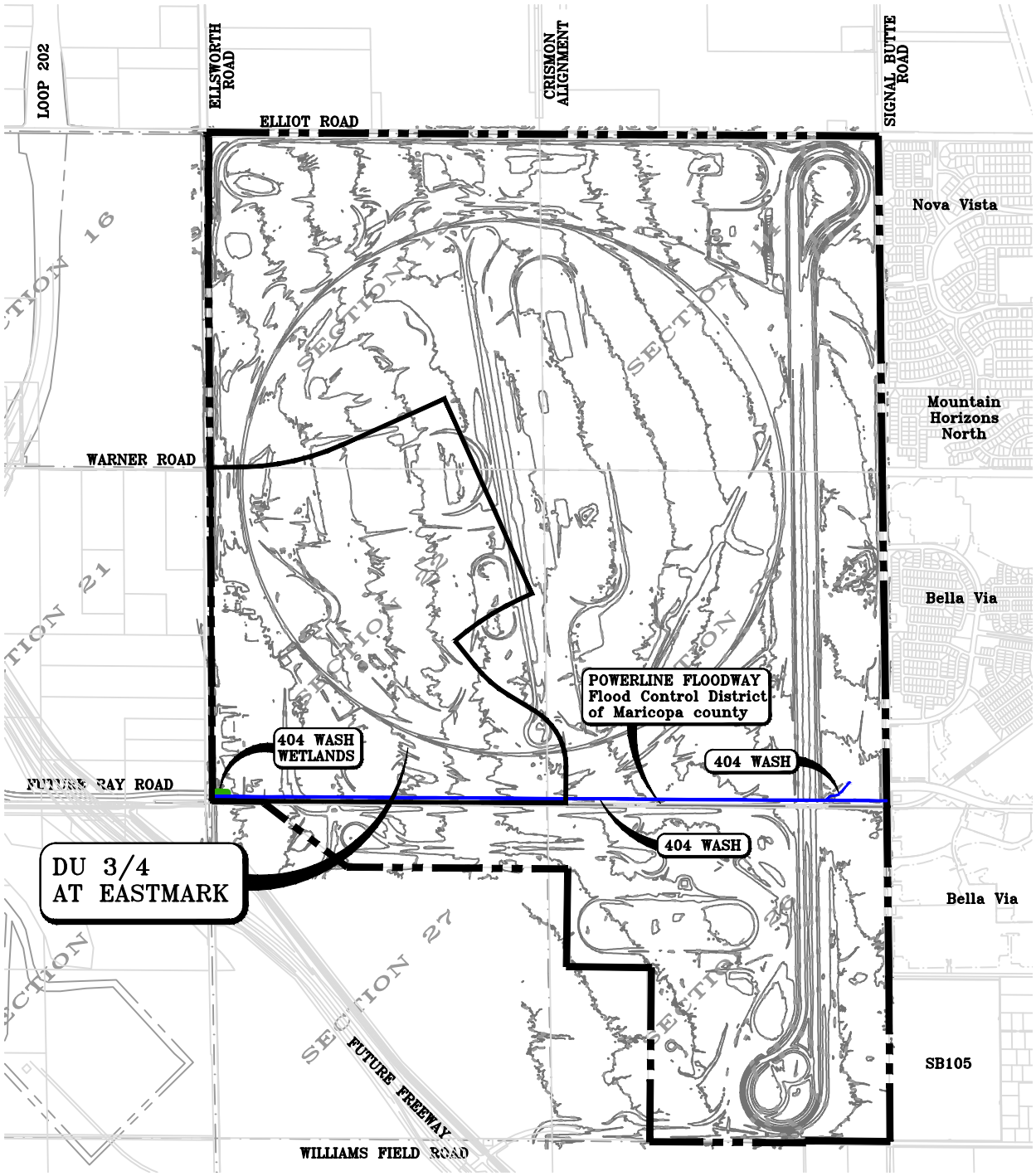
EXHIBIT 4

SECTION 404 JURISDICTIONAL DELINEATION MAP



LEGEND

- 404 WASH
- 404 WASH WETLANDS
- PROPERTY BOUNDARY
- 5 FT. CONTOUR 1430

N

N.T.S.

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EXHIBIT 4: 404 JURISDICTIONAL DELINEATION MAP

EASTMARK
MESA, ARIZONA

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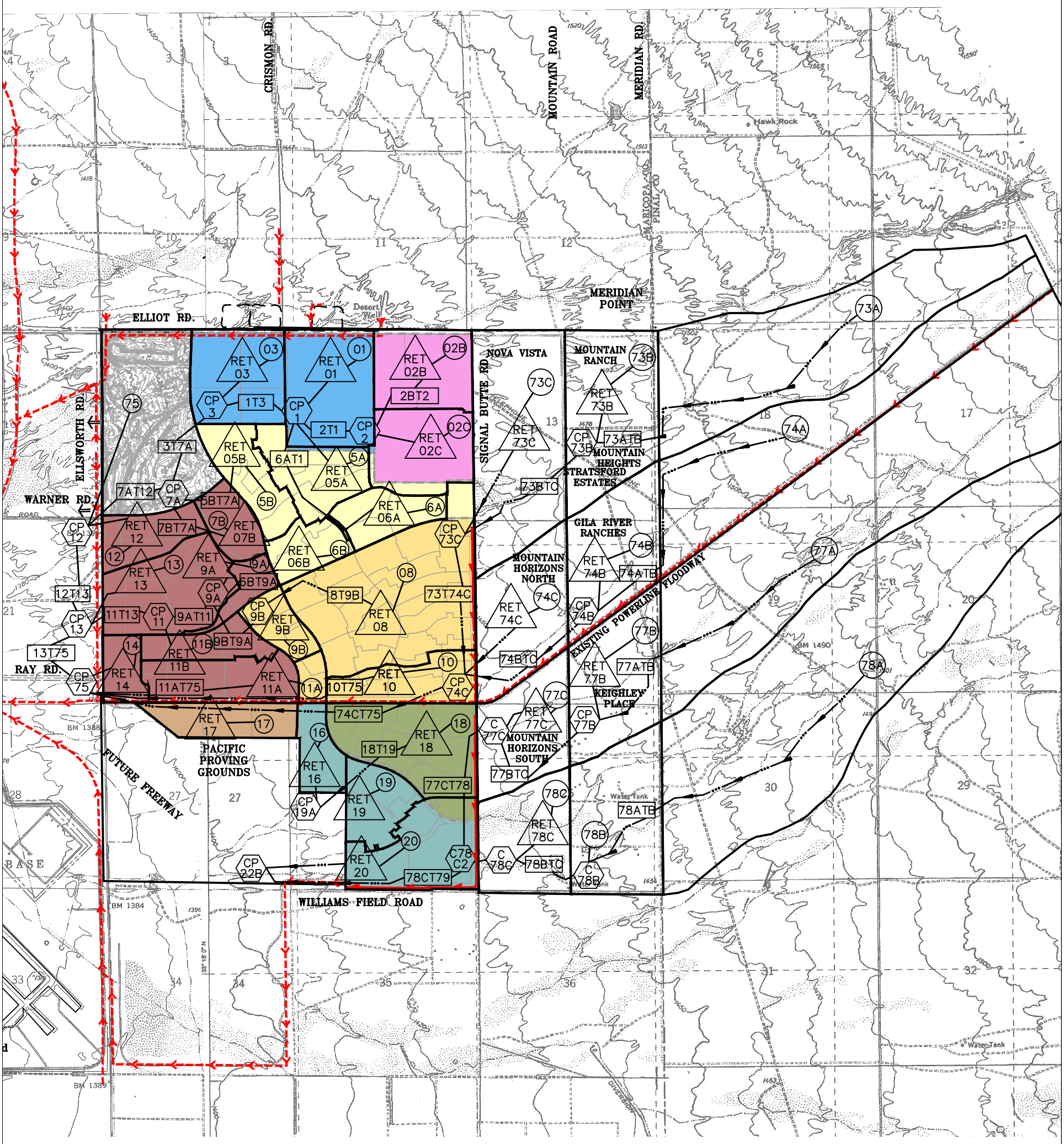
EXHIBIT 5

INTERIM CONDITION HEC-1 SCHEMATIC



LOCATION ID	DISCHARGE (CFS)
CP75	650
RET17	1
CP19A	57
RET19	126
78CT79	936

N

3000 0 1500 3000

Horz. 1 in. = 3000 ft.

SUB-BASIN BOUNDARY

EXISTING STORM DRAIN

PROPOSED TEMPORARY BERM OR SWALE

EXISTING CHANNEL OR STORM DRAIN

ROUTING

5 FT. CONTOUR

FLOW DIRECTION ARROW

LEGEND

77C — WATERSHED ID

77BTC — ROUTING ID

C 77C — CONCENTRATION POINT ID

RET 73B — RETENTION ID

DU 3S

DU 3/4

DU 5N

DU 6N

DU 6S

DU 7

DU 8

DU-9

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EXHIBIT 5: INTERIM CONDITION HEC-1 SCHEMATIC

DU 3/4 AT EASTMARK
MESA, ARIZONA

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EXHIBIT 6

INTERIM DRAINAGE MAP

EXISTING ELLIOT DETENTION BASINS

EXISTING ELLIOT STORM DRAIN SYSTEM

TEMPORARY 80% PEAK FLOW STORAGE REQUIRED DURING INTERIM CONDITION

TEMPORARY BERM OR SWALE

TEMPORARY RETENTION

ELLSWORTH RD.

WARNER RD.

RAY RD.

FUTURE FREEWAY

SIGNAL BUTTE RD.

NOVA VISTA

MOUNTAIN HORIZONS NORTH

MOUNTAIN HORIZONS SOUTH

PACIFIC PROVING GROUNDS

WILLIAMS FIELD ROAD

BM 1398

BM 1384

75 03 01 02B 02C 5A 5B 6A 6B 7B 12 9A 13 9B 08 11B 14 11A 10 17 16 18 19 20

LEGEND

- PROPOSED CHANNEL AND/OR STORM DRAIN SYSTEM
- EXISTING CHANNEL
- EXISTING STORM DRAIN
- EXISTING BOX CULVERT
- FLOW DIRECTION ARROW
- 5 FT. CONTOUR
- TEMPORARY RETENTION
- SUB-BASIN LABEL (01)
- DU 3S
- DU 3/4
- DU 5N
- DU 6N
- DU 6S
- DU 7
- DU 8
- DU-9

1400 0 700 1400

Horz. 1 in. = 1400 ft.

N

NOT FOR CONSTRUCTION OR RECORDING

EXHIBIT 6: INTERIM DRAINAGE MAP

DU 3/4 AT EASTMARK
MESA, ARIZONA

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