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PVSP DRAINAGE STUDY

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Prepared for

Town of Paradise Valley
City of Scottsdale
City of Phoenix
Flood Control District of Maricopa County

VOLUME II

Prepared by

Collar, Williams and White Engineering, Inc.
Water Resources Associates, Inc.
Scottsdale, Arizona
July 15, 1978

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Vol. II

PVSP DRAINAGE STUDY

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Prepared for

Town of Paradise Valley
City of Scottsdale
City of Phoenix
Flood Control District of Maricopa County

VOLUME II

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Scottsdale, Arizona
July 15, 1978

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HYDROLOGY

Summary of Methods

Storm patterns that produce flooding in the Phoenix Metropolitan area are discussed in a number of reports previously published, particularly those by the Corps of Engineers and no review is necessary for this report. Of significance in this study is the high-intensity, short-duration summer storms which produce high-peak flows and relatively-small volumes. Winter storms are of lower intensity and longer duration, and create periods of longer flow and higher volumes. The latter are significant in the detention basin analyses.

The pattern of the storm of June 22, 1972 was transposed to the PVSP study area and it was found that almost the entire area would be included within the 3" isohytel which was developed for that storm. Its duration was less than one hour.

Because of the areal dimensions of the major summer storms that occur in this area, it was concluded that 100-year storm point intensities could be used for each of the sub-basins into which the study has been divided. They were then treated as though there was simultaneous precipitation of that intensity over the area and the mass hydrographs have been constructed on that basis.

This is a conservative approach, since equal precipitation will not be precisely simultaneous in all of the sub-basins. However, the results correspond with the basin hydrology of the Corps of Engineers. Point intensities vary with the size of the drainage areas but the primary data comes from Weather Bureau Technical Memorandum 44.

When the sub-basins are considered individually, type of storm that has been assumed for each of those sub-basins is felt to be accurate since similar high-intensity, short-duration storms over small areas occur at several points in the Valley in most summers.

Criteria for Computing Flood Peaks

1. Use point concentrations from WBTM 44.
2. Use SCS distribution - Type 2 Curve.
3. Fully developed conditions - 50% impervious.
4. Use 0.7" infiltration on pervious area.
5. SCS Curve Number generated by machine from pervious-impervious relationship.
6. Size and position of sub-areas selected because of hydraulic criteria provided by Flood Control District and the Cities.
7. Routing by streets and the streets used as channels, and by overland flow, except where specific structures were pre-determined.
8. Detention basins routed by reservoir routing methods using inflow hydrographs and developing outflow hydrology by way of depth-volume-time relationships and hydraulic characteristics of outlet.
9. Time and magnitude of peaks and volume of runoff is determined by computer.

Construction of Hydrographs

All hydrographs for summer storms were computed by SCS methods. Nearly any method would have been applicable; however, most engineering offices are familiar with the Arizona Highway Department Hydrology Manual which is based upon SCS methods. This provides an opportunity for rapid check and analysis if necessary.

Winter-storm hydrographs were computed by using a Corp of Engineers Unit Hydrograph with an applicable S-Curve for the Phoenix area. The Corps of Engineers method is more applicable for Winter Storms in this area.

Individual sub-basin or detention basin hydrographs were lagged as to time and combined from top to bottom of each major drainage area to arrive at peaks, durations, and quantities into Indian Bend Wash.

Order of Presentation

Hydrologic data in the report have been presented in order from the Granite Reef Aqueduct down to Indian Bend Wash, with some tributary splits en route, for each hydrologic sub-basin which will be found on Plate 2. Following the Hydrologic Basin Data Sheets, applicable hydrographs for the sub-basin or basins are inserted in order.

Unless otherwise noted, all basic data sheets and hydrographs are for project conditions. Comparative hydrographs of flood peaks for "No Project" conditions follow the project hydrographs where applicable. "No Project" conditions means that computed peaks and runoff is from the area at full development, but without detention basins or channels, except for existing channels such as 64th Street and the Berniel system.

Some of the concentration points have no Hydrographic Basin Data Sheets. These are points of collection and the hydrographs are summations of hydrographs of all discharges contributing to that collection point.

Five concentration points in Indian Bend Wash have been compared for the 100-year summer storm by developing hydrographs accumulated to the points of concentration without the Project and with the Project.

Mechanics of Hydrologic Routing and General Comparison of Project/No Project Conditions

Project A

This project area has been broken down into sub-basins A-1 through A-8 (see Plate II). Runoff from A-1 and A-2 is controlled at the Acoma Detention Basin (see Plate I). Both summer and winter 100-year storms are controlled except for a period of about 0.6 hours, with a peak reduction from 733 cfs to 295 cfs (summer). Additional capacity of approximately 8 acre feet will entirely control, both summer and winter storms. Outflow is reduced to 12 cfs in 13 hours.

The Sereno Detention Basin completely controls the 100-year storms. Outflow is reduced to 15 cfs in 18 hours.

Computations were made for "No Project" conditions, where the runoff is discharged at 56th Street and Mountain View (at CP 307), as if a physical barrier existed. In reality water will flow through 56th, 57th, 58th, and 59th Streets and meanders through all of the subdivisions.

The change in this drainage area for Project conditions is that the Herberger Parcels (Desert Springs Subdivision) will capture the waters from drainage area A-1 and A-2, route them through the Acoma Detention Basin, then through A-3 to Sereno Park Detention Basin.

For the hydrologic analysis, drainage areas on the Desert Springs Subdivision map show waters flowing to the channel in the center of A-3 and to 56th Street. The intention appears to be to stop the storm waters flowing overland at Thunderbird and channelize them at that point or above.

From Thunderbird south, the storm waters flow into Sereno Park Detention Basin then use 56th Street as a channel to Indian Bend Wash. All inflows between 60th Street and 56th Street were routed to Mountain View and 56th Street.

The effect of the detention basins is to reduce peak flow at CP 305 from 2400 cfs to 950 cfs, and to increase time of runoff from 2.4 hours to 26 hours. Also, the peak at CP 307 is reduced from 3500 cfs to 1800 cfs and runoff time is increased from 3 hours to 18 hours.

For the southeast portion of the A system (sub-basins A-6 and A-8), both Project and "No Project" conditions are identical. For drainage basin A-4, 40% of the runoff was routed to the center of drainage basin A-6 and southerly to what would be approximately 62nd Street at the Wash. For analytic purposes, these were all routed as flowing through the center of the drainage sub-divisions A-6 and A-8. There is no differential impact between Project and "No Project" in this area.

Project B

Project B embraces sub-basin B-1 through B-15.

In this area, sub-basins B-3, B-3a, B-4, B-5, B-10 and B-11 in the Desert Springs Subdivision are routed identically for Project and "No Project". Desert Springs has no significant impact and provides no protection at Thunderbird. There is a possibility of detention basins being constructed above Desert Springs and below the Granite Reef Aqueduct. However, instructions from the City of Phoenix were carefully followed. This provided hydrologic output for fully developed conditions with no detention or chanellization. Storm waters from this area were routed to Cactus and 64th, then downstream to approximately Mountain View and 64th Street where the Berniel bifurcation works were constructed.

At CP 206, an arbitrary 50-50 split was made, allowing 50% of the water to go into the Berniel System and 50% down 64th Street (Invergordon) to Indian Bend Wash. Project/No Project conditions are identical for this reach.

In the eastern portion of Project B, there is some beneficial impact by the Desert Springs Development. The subdivision plans show waters routed from the Aqueduct down to

approximately Hearn Road and from Scottsdale Road to approximately 64th Street, into the detention basin at 66th and Hearn.

The other modification in Project B is that drainage area C-2 would be forced to flow south along Scottsdale Road to Thunderbird and become tributary to the Scottsdale Road system south of the Airport Detention Basin. The effect of this is to block all of the storm waters from areas B-1, B-7, and B-8 which are east of 58th Street and divert them to the 64th Street system.

Outflow from the Hearn Detention Basin was routed to 64th Street and south along 64th Street to the bifurcation works at approximately Mountain View. Then 50% of these waters were put into the Berniel System and 50% routed along 64th Street to the Wash. South of Thunderbird, drainage areas B-12, B-13 and B-14 are routed to the center of those drainage areas and outletting at the Berniel System along Mountain View Road at CP 208. Since there are no physical structures, these waters will flow overland and will not all be concentrated at CP 208, in reality, but will fall some place into the Berniel System between 64th Street and 68th Street.

In all probability for the 100-year storm, the Berniel System along Mountain View Road will overtop and flow overland to the Wash. However, the routings were such that this was not taken into account and that the flows were all captured theoretically in the channels provided. This holds true for all of the detention basins, even though uncontrolled flows from these basins may go any direction. For computation purposes, the uncontrolled flows follow the alinement of the hydraulic routing as given to us.

Hearn Detention Basin is not very effective as a detention structure. The peak discharge is only reduced from 3694 cfs to 3631 cfs and time of runoff is increased from 2 hours to 12 hours. Its principle purpose is to lessen the impact of runoff directed to the west from areas that should drain to Project C. It is also useful in redirecting the flow at that point.

There would need to be an additional 170 acre feet of capacity to control the 100-year storm.

Peak flow at CP 204 is increased from 4440 cfs to 4920 cfs because of the addition of sub-basins B-1, B-2, B-6, B-7 and B-8. This follows through to CP 206 where the peak increases from 4440 cfs to 4970 cfs.

The peak at CP 205 is decreased from 4360 cfs to 1825 cfs because of the re-routing by Hearn Detention Basin. This decrease carries through to CP 208, where the peak is reduced from 4475 cfs to 2560 cfs.

Peaks at CP 207 and CP 209 are increased proportionately at the bifurcation works, the same as for CP 204 and CP 206.

The Berniel System and the 64th Street channel would be overtoped for about 1½ hours. This is due to the lack of sufficient detention capacity and/or undersized channels in Project B.

Project C

This is the most complex of the four-areas studied. It includes sub-basins C-1 through C-18 from the Aqueduct through the Scottsdale Airport down into and through the Berniel System.

Commencing with the extreme western portion of Project C, Project and "No Project" conditions for drainage areas C-5, C-6 and C-13 are the same and were routed to the Gary Road Detention Basin. There are no physical barriers to drain the waters through these sub-basins. In reality, flows will spread overland, with the largest percentage following the roadways.

Drainage areas C-4, C-7 and C-12 are routed to CP 108 under the same set of circumstances. For the Project conditions, Gary Road Detention Basin will handle the 100-year summer storm with no uncontrolled spills. This is significant, but will be true only if the Desert Springs Subdivision routes flood waters into the Project B area as previously outlined.

For the hydrologic analysis, the boundary between drainage areas B-8 and C-15 is considered as a barrier.

At the northwest corner of Project C, drainage area C-2 is routed to CP 103 via Scottsdale Road. The Scottsdale Airport Detention Basin was considered to capture all of the waters from drainage areas C-1 and C-3, discharging them above Thunderbird Road to combine with the flows from drainage area C-2. The detention basin at the Airport will contain only about one-half of the 100-year storm. The 100-year peak was reduced from 1750 cfs to 1520 cfs at CP 102, the outlet from the Airport Detention Basin.

It would take approximately 30 acre feet of additional capacity to control the summer 100-year peak. It would take only about 11 acre feet additional capacity to control the winter 100-year peak. The channel system at the confluence of the Airport outlet and the inflow from drainage area C-2 is not large enough to contain the 100-year summer storm. The peak discharge is 2,225 cfs and the channel design is 850 cfs. The flow exceeds the design capacity for about one-half hour. It was anticipated that the overflow from this point will generally follow Scottsdale Road, flow to the Cactus Detention Basin, and be discharged into the channel system at CP 105. There is a good possibility that some uncontrolled waters flowing along Scottsdale Road will flow back into drainage area C-7 as they now do. However, they will be of a lesser magnitude than they are today owing to the detention basin at the Airport.

The Cactus Road Detention Basin almost controls the entire 100-year summer peak. Increasing the Cactus Detention Basin by 8 acre feet will control the 100-year runoff.

From the Cactus Road Detention Basin outlet CP 105, waters are routed along Scottsdale Road to a Stilling Basin just south of Gary Road, behind the nursery at CP 108. At this point, the peaks from drainage area C-4, C-7 and C-12 are also intercepted.

There are no physical barriers through most of the area to preclude overland flows. However, the bulk of the excess storm waters will follow the roadways. South of Gary Road under present conditions all of the uncontrolled flows and

sheet flows from the upstream drainage areas could be routed to CP 108 by use of a physical barrier which could be constructed with very little work.

The Project would reduce the peak at CP 108 from 2500 cfs to 1090 cfs. Duration of flow would be extended from 3 hours to 18 hours.

The hydrologic analyses route the waters from the Gary Road Detention Basin to CP 108 and then south along an 1100 cfs design channel to the Berniel System. The flow computed for this channel is between 1200 and 1300 cfs and the channel design was for 1100 cfs so it is conceivable that all of the flows will be contained in the design-channel system from Gary Road to Mountain View Road. This would include drainage area C-15 which for computation purposes was routed to the channel system. Drainage areas C-14 and C-17 were routed to the Chaparral High School Detention system and outletted into the Berniel System at CP 111.

Peak flows at CP 111 have been reduced from 3060 cfs to 52 cfs. Duration of flow has been increased from 2½ hours to more than 18 hours.

All of the flows combined into the Berniel System from 64th Street on the west side and Scottsdale Road on the east side were routed to CP 112 through the Berniel System and outletted at 66th Street CP 114 about 1/4 mile above the Wash. Peak flow at CP 112 would be reduced from 10,600 cfs to 4000 cfs and the flow duration increased from 3½ hours to more than 18 hours.

The Berniel System will not handle all of the flow. The excess in that reach over and above the Berniel capacity will sheet flow to the Wash through the roadways, yards, etc.

Area B-15 and C-18 are outletted at CP 114 and CP 113, respectively, into the Wash.

Peak flow at CP 114 would be reduced from 10,700 cfs to 2790 cfs. Duration of flow would be increased from 3½ hours to about 30 hours.

Desert Cove System

The Desert Cove System hydrographs are provided at CP 401, as requested.

The hydrographs indicate that a system of protective devices must be implemented to preclude probable damages from any storm.

Indian Bend Wash

Hydrographs are provided for both Project and "No Project" conditions. The CPs have been numbered in the 500 series. These hydrographs represent only the runoff from Projects A. B, and C of the PVSP Study and do not include the sub-basins on the east, which are tributary to Scottsdale Road and which would discharge into the Wash below CP 504. Also, they do not include discharges from upstream.

The Corps of Engineers, Los Angeles District, hydrology was done on a broad area basis. It provides only a single hydrograph and peak discharge for the total Indian Bend Wash drainage area, tributary to Scottsdale Road, for a Standard Project storm. Lesser peak discharges are ratioed down from the Standard Project peak.

This approach provides reasonable answers. However, it was found that a direct comparison using the results of the Corp of Engineers' studies could not be made without resorting to many assumptions, some of which may not be valid.

Therefore, the results of the computations for the PVSP Study area were compared in the Indian Bend Wash on an individual basis at several points to determine the impact on the Wash. The best and most dramatic comparison is at CP 504.

For Project conditions, the 100-year summer-peak discharge is approximately 7400 cfs at 1.60 hours with a discharge over 4000 cfs lasting for approximately 1.5 hours.

The "No Project" conditions show a 100-year summer peak discharge of approximately 14300 cfs at 1.9 hours with a discharge of over 4000 cfs lasting for about 1.6 hours.

This comparison shows a substantial decrease in the peak discharge with very little change in the time of peak.

Since many devices have been constructed downstream from Scottsdale Road to carry about 4,000 cfs, these comparisons indicate that the impact of the PVSP Project is favorable, particularly with respect to reduction of peak discharge. Longer duration of the drain out is compatible with the low-flow channel below the Arizona Canal.

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-1

Frequency in years 100
Drainage area in sq. mi. 0.383
Length in ft. 7600
Elevation, ft. msl:
Top of Basin 1521
Bottom of Basin 1453
Basin Slope in % 0.9
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.76
Precipitation:
Duration in hrs. 0.76
Point Precipitation in inches 2.42
Rainfall intensity in./hr. 3.18
Pervious Area in sq. mi. 0.191
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.192
Curve Number 96
Runoff (Q) in inches 1.96
Time of Peak in hrs. 0.51
Peak Discharge in cfs 718
Runoff Volume in af. 40

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-2

Frequency in years 100
Drainage area in sq. mi. 0.252
Length in ft. 2000
Elevation, ft. msl:
    Top of Basin 1453
    Bottom of Basin 1437
Basin Slope in % 0.8
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.28
Precipitation:
    Duration in hrs. 0.28
    Point Precipitation in inches 1.64
    Rainfall intensity in./hr. 5.79
Pervious Area in sq. mi. 0.126
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.126
Curve Number 98
Runoff (Q) in inches 1.40
Time of Peak in hrs. 0.19
Peak Discharge in cfs 905
Runoff Volume in af. 19

58TH STREET AND ACOMA DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 301

TOTAL OUTFLOW AT CP 302

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	471	235	3	0	1.92	3
0.20	900	685	5	0	7.58	5
0.30	599	750	8	0	13.71	8
0.40	435	517	14	0	17.88	14
0.50	550	493	20	0	21.78	20
0.60	694	622	30	0	26.68	30
0.70	733	714	41	0	32.24	41
0.80	686	709	54	0	37.65	54
0.90	578	632	65	0	42.34	65
1.00	429	504	68	234	44.00	302
1.10	298	363	68	295	44.00	363
1.20	215	256	68	188	44.00	256
1.30	160	188	68	119	44.00	188
1.40	116	138	68	70	44.00	138
1.50	84	100	68	32	44.00	100
1.60	61	73	68	4	44.00	73
1.70	44	53	68	0	43.87	68
1.80	32	38	68	0	43.62	68
1.90	23	28	68	0	43.29	68
2.00	17	20	67	0	42.91	67
2.10	12	15	66	0	42.49	66
2.20	9	11	65	0	42.04	65
2.30	7	8	63	0	41.58	63
2.40	5	6	62	0	41.12	62
2.50	4	4	61	0	40.65	61
2.60	2	3	60	0	40.17	60
2.70	1	1	59	0	39.70	59
2.80	0	0	58	0	39.23	58
2.90	0	0	57	0	38.76	57
3.00	0	0	55	0	38.30	55
3.10	0	0	54	0	37.85	54
3.20	0	0	53	0	37.41	53
3.30	0	0	52	0	36.98	52
3.40	0	0	51	0	36.56	51
3.50	0	0	50	0	36.14	50
3.60	0	0	49	0	35.73	49
3.70	0	0	48	0	35.33	48
3.80	0	0	47	0	34.94	47
3.90	0	0	47	0	34.55	47
4.00	0	0	46	0	34.18	46
4.10	0	0	45	0	33.81	45
4.20	0	0	44	0	33.44	44
4.30	0	0	43	0	33.08	43
4.40	0	0	42	0	32.73	42
4.50	0	0	42	0	32.39	42
4.60	0	0	41	0	32.05	41
4.70	0	0	40	0	31.72	40
4.80	0	0	40	0	31.39	40
4.90	0	0	39	0	31.07	39
5.00	0	0	38	0	30.75	38
5.10	0	0	37	0	30.44	37
5.20	0	0	37	0	30.14	37
5.30	0	0	36	0	29.84	36
5.40	0	0	36	0	29.55	36
5.50	0	0	35	0	29.26	35
5.60	0	0	34	0	28.97	34
5.70	0	0	34	0	28.69	34
5.80	0	0	33	0	28.42	33
5.90	0	0	33	0	28.15	33

58TH STREET AND ACOMA DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 301

TOTAL OUTFLOW AT CP 302

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	32	0	27.88	32
6.10	0	0	32	0	27.62	32
6.20	0	0	31	0	27.37	31
6.30	0	0	31	0	27.11	31
6.40	0	0	30	0	26.87	30
6.50	0	0	30	0	26.62	30
6.60	0	0	29	0	26.38	29
6.70	0	0	29	0	26.14	29
6.80	0	0	28	0	25.91	28
6.90	0	0	28	0	25.68	28
7.00	0	0	27	0	25.46	27
7.10	0	0	27	0	25.24	27
7.20	0	0	26	0	25.02	26
7.30	0	0	26	0	24.80	26
7.40	0	0	26	0	24.59	26
7.50	0	0	25	0	24.38	25
7.60	0	0	25	0	24.18	25
7.70	0	0	24	0	23.98	24
7.80	0	0	24	0	23.78	24
7.90	0	0	24	0	23.58	24
8.00	0	0	23	0	23.39	23
8.10	0	0	23	0	23.20	23
8.20	0	0	23	0	23.02	23
8.30	0	0	22	0	22.83	22
8.40	0	0	22	0	22.65	22
8.50	0	0	22	0	22.47	22
8.60	0	0	21	0	22.30	21
8.70	0	0	21	0	22.12	21
8.80	0	0	21	0	21.95	21
8.90	0	0	20	0	21.78	20
9.00	0	0	20	0	21.62	20
9.10	0	0	20	0	21.46	20
9.20	0	0	19	0	21.29	19
9.30	0	0	19	0	21.14	19
9.40	0	0	19	0	20.98	19
9.50	0	0	19	0	20.83	19
9.60	0	0	18	0	20.67	18
9.70	0	0	18	0	20.52	18
9.80	0	0	18	0	20.38	18
9.90	0	0	18	0	20.23	18
10.00	0	0	17	0	20.09	17
10.10	0	0	17	0	19.95	17
10.20	0	0	17	0	19.81	17
10.30	0	0	17	0	19.67	17
10.40	0	0	16	0	19.53	16
10.50	0	0	16	0	19.40	16
10.60	0	0	16	0	19.27	16
10.70	0	0	16	0	19.14	16
10.80	0	0	16	0	19.01	16
10.90	0	0	15	0	18.88	15
11.00	0	0	15	0	18.76	15
11.10	0	0	15	0	18.63	15
11.20	0	0	15	0	18.51	15
11.30	0	0	15	0	18.39	15
11.40	0	0	14	0	18.27	14
11.50	0	0	14	0	18.16	14
11.60	0	0	14	0	18.04	14
11.70	0	0	14	0	17.93	14
11.80	0	0	14	0	17.81	14
11.90	0	0	13	0	17.70	13

58TH STREET AND ACOMA DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 301

TOTAL OUTFLOW AT CP 302

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
12.00	0	0	13	0	17.59	13
12.10	0	0	13	0	17.49	13
12.20	0	0	13	0	17.38	13
12.30	0	0	13	0	17.27	13
12.40	0	0	13	0	17.17	13
12.50	0	0	12	0	17.07	12
12.60	0	0	12	0	16.97	12
12.70	0	0	12	0	16.87	12
12.80	0	0	12	0	16.77	12
12.90	0	0	12	0	16.67	12
13.00	0	0	12	0	16.57	12
13.10	0	0	12	0	16.48	12
13.20	0	0	11	0	16.38	11
13.30	0	0	11	0	16.29	11
13.40	0	0	11	0	16.20	11
13.50	0	0	11	0	16.11	11
13.60	0	0	11	0	16.02	11
13.70	0	0	11	0	15.93	11
13.80	0	0	11	0	15.84	11
13.90	0	0	10	0	15.76	10
14.00	0	0	10	0	15.67	10
14.10	0	0	10	0	15.59	10
14.20	0	0	10	0	15.51	10
14.30	0	0	10	0	15.42	10
14.40	0	0	10	0	15.34	10
14.50	0	0	10	0	15.26	10
14.60	0	0	10	0	15.18	10
14.70	0	0	9	0	15.11	9
14.80	0	0	9	0	15.03	9
14.90	0	0	9	0	14.95	9
15.00	0	0	9	0	14.88	9
15.10	0	0	9	0	14.80	9
15.20	0	0	9	0	14.73	9
15.30	0	0	9	0	14.65	9
15.40	0	0	9	0	14.58	9
15.50	0	0	9	0	14.51	9
15.60	0	0	9	0	14.44	9
15.70	0	0	8	0	14.37	8
15.80	0	0	8	0	14.30	8
15.90	0	0	8	0	14.23	8
16.00	0	0	8	0	14.17	8
16.10	0	0	8	0	14.10	8
16.20	0	0	8	0	14.03	8
16.30	0	0	8	0	13.97	8
16.40	0	0	8	0	13.90	8
16.50	0	0	8	0	13.84	8
16.60	0	0	8	0	13.78	8
16.70	0	0	8	0	13.71	8
16.80	0	0	7	0	13.65	7
16.90	0	0	7	0	13.59	7
17.00	0	0	7	0	13.53	7
17.10	0	0	7	0	13.47	7
17.20	0	0	7	0	13.41	7
17.30	0	0	7	0	13.35	7
17.40	0	0	7	0	13.30	7
17.50	0	0	7	0	13.24	7
17.60	0	0	7	0	13.18	7
17.70	0	0	7	0	13.13	7
17.80	0	0	7	0	13.07	7
17.90	0	0	7	0	13.02	7

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 302

NO PROJECT

t	q
0.00	0
0.10	471
0.20	970
0.30	746
0.40	676
0.50	748
0.60	756
0.70	695
0.80	583
0.90	431
1.00	298
1.10	215
1.20	160
1.30	116
1.40	84
1.50	61
1.60	44
1.70	32
1.80	23
1.90	17
2.00	12
2.10	9
2.20	7
2.30	5
2.40	4
2.50	2
2.60	1
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

58TH STREET AND ACOMA DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 301

t	q
0.00	0
0.25	6
0.50	11
0.75	17
1.00	26
1.25	36
1.50	45
1.75	48
2.00	51
2.25	54
2.50	56
2.75	58
3.00	60
3.25	62
3.50	69
3.75	114
4.00	148
4.25	328
4.50	351
4.75	242
5.00	478
5.25	395
5.50	141
5.75	105
6.00	79
6.25	58
6.50	51
6.75	38
7.00	29
7.25	25
7.50	8
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

58TH STREET AND ACOMA DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

TOTAL OUTFLOW AT CP 302

t	q	t	q
0.00	0	15.00	18
0.25	1	15.25	17
0.50	1	15.50	16
0.75	1	15.75	16
1.00	1	16.00	15
1.25	2	16.25	15
1.50	2	16.50	14
1.75	2	16.75	14
2.00	3	17.00	13
2.25	3	17.25	13
2.50	3	17.50	13
2.75	3	17.75	12
3.00	4	18.00	12
3.25	5	18.25	11
3.50	5	18.50	11
3.75	7	18.75	11
4.00	10	19.00	10
4.25	17	19.25	10
4.50	29	19.50	10
4.75	41	19.75	9
5.00	56	20.00	9
5.25	134	20.25	9
5.50	268	20.50	9
5.75	123	20.75	8
6.00	92	21.00	8
6.25	68	21.25	8
6.50	68	21.50	8
6.75	68	21.75	8
7.00	68	22.00	7
7.25	66	22.25	7
7.50	63	22.50	7
7.75	60	22.75	7
8.00	57	23.00	7
8.25	55	23.25	6
8.50	52	23.50	6
8.75	50	23.75	6
9.00	47	24.00	6
9.25	45	24.25	6
9.50	43	24.50	6
9.75	41	24.75	5
10.00	39	25.00	5
10.25	37	25.25	5
10.50	36	25.50	5
10.75	34	25.75	5
11.00	33	26.00	0
11.25	31	26.25	0
11.50	30	26.50	0
11.75	29	26.75	0
12.00	28	27.00	0
12.25	27	27.25	0
12.50	26	27.50	0
12.75	25	27.75	0
13.00	24	28.00	0
13.25	23	28.25	0
13.50	22	28.50	0
13.75	21	28.75	0
14.00	20	29.00	0
14.25	20	29.25	0
14.50	19	29.50	0
14.75	18	29.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-3

Frequency in years 100
Drainage area in sq. mi. 0.248
Length in ft. 2660
Elevation, ft. msl:
    Top of Basin 1430
    Bottom of Basin 1415
Basin Slope in % 0.6
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.49
Precipitation:
    Duration in hrs. 0.49
    Point Precipitation in inches 2.09
    Rainfall intensity in./hr. 4.24
Pervious Area in sq. mi. 0.124
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.124
Curve Number 97
Runoff (Q) in inches 1.75
Time of Peak in hrs. 0.33
Peak Discharge in cfs 639
Runoff Volume in af. 23

SERENO PARK DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 303

TOTAL OUTFLOW AT CP 304

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	124	62	4	0	0.48	4
0.20	428	276	6	0	2.75	6
0.30	636	532	8	0	7.13	8
0.40	594	615	10	0	12.12	10
0.50	430	512	19	0	16.20	19
0.60	256	343	25	0	18.83	25
0.70	171	213	29	0	20.36	29
0.80	120	146	31	0	21.30	31
0.90	98	109	33	0	21.93	33
1.00	88	93	34	0	22.41	34
1.10	86	87	35	0	22.84	35
1.20	315	201	39	0	24.18	39
1.30	371	343	46	0	26.63	46
1.40	262	316	52	0	28.81	52
1.50	190	226	57	0	30.21	57
1.60	139	165	59	0	31.08	59
1.70	100	119	61	0	31.56	61
1.80	73	86	62	0	31.77	62
1.90	68	70	62	0	31.84	62
2.00	68	68	62	0	31.89	62
2.10	68	68	62	0	31.93	62
2.20	67	67	62	0	31.98	62
2.30	66	66	62	0	32.01	62
2.40	65	65	63	0	32.03	63
2.50	63	64	63	0	32.04	63
2.60	62	63	63	0	32.05	63
2.70	61	62	63	0	32.04	63
2.80	60	61	62	0	32.02	62
2.90	59	59	62	0	32.00	62
3.00	58	58	62	0	31.96	62
3.10	57	57	62	0	31.92	62
3.20	55	56	62	0	31.87	62
3.30	54	55	62	0	31.82	62
3.40	53	54	62	0	31.75	62
3.50	52	53	61	0	31.68	61
3.60	51	52	61	0	31.60	61
3.70	50	51	61	0	31.52	61
3.80	49	50	61	0	31.43	61
3.90	48	49	60	0	31.34	60
4.00	47	48	60	0	31.24	60
4.10	47	47	60	0	31.13	60
4.20	46	46	59	0	31.02	59
4.30	45	45	59	0	30.91	59
4.40	44	44	59	0	30.79	59
4.50	43	44	58	0	30.67	58
4.60	42	43	58	0	30.55	58
4.70	42	42	57	0	30.42	57
4.80	41	41	57	0	30.29	57
4.90	40	41	57	0	30.16	57
5.00	40	40	56	0	30.03	56
5.10	39	39	56	0	29.89	56
5.20	38	38	55	0	29.75	55
5.30	37	38	55	0	29.61	55
5.40	37	37	54	0	29.47	54
5.50	36	37	54	0	29.32	54
5.60	36	36	54	0	29.18	54
5.70	35	35	53	0	29.03	53
5.80	34	35	53	0	28.88	53
5.90	34	34	52	0	28.73	52

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

SERENO PARK DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 303

TOTAL OUTFLOW AT CP 304

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	33	33	52	0	28.58	52
6.10	33	33	51	0	28.43	51
6.20	32	32	51	0	28.27	51
6.30	32	32	50	0	28.12	50
6.40	31	31	50	0	27.97	50
6.50	31	31	49	0	27.81	49
6.60	30	30	49	0	27.66	49
6.70	30	30	49	0	27.50	49
6.80	29	29	48	0	27.35	48
6.90	29	29	48	0	27.19	48
7.00	28	28	47	0	27.04	47
7.10	28	28	47	0	26.88	47
7.20	27	27	46	0	26.73	46
7.30	27	27	46	0	26.57	46
7.40	26	27	45	0	26.42	45
7.50	26	26	45	0	26.26	45
7.60	26	26	44	0	26.11	44
7.70	25	25	44	0	25.95	44
7.80	25	25	44	0	25.80	44
7.90	24	25	43	0	25.65	43
8.00	24	24	43	0	25.49	43
8.10	24	24	42	0	25.34	42
8.20	23	23	42	0	25.19	42
8.30	23	23	41	0	25.04	41
8.40	23	23	41	0	24.89	41
8.50	22	22	41	0	24.74	41
8.60	22	22	40	0	24.59	40
8.70	22	22	40	0	24.44	40
8.80	21	21	39	0	24.29	39
8.90	21	21	39	0	24.14	39
9.00	21	21	38	0	24.00	38
9.10	20	20	38	0	23.85	38
9.20	20	20	38	0	23.71	38
9.30	20	20	37	0	23.56	37
9.40	19	20	37	0	23.42	37
9.50	19	19	37	0	23.28	37
9.60	19	19	36	0	23.14	36
9.70	19	19	36	0	23.00	36
9.80	18	19	35	0	22.86	35
9.90	18	18	35	0	22.72	35
10.00	18	18	35	0	22.58	35
10.10	18	18	34	0	22.45	34
10.20	17	17	34	0	22.31	34
10.30	17	17	34	0	22.18	34
10.40	17	17	33	0	22.04	33
10.50	17	17	33	0	21.91	33
10.60	16	17	32	0	21.78	32
10.70	16	16	32	0	21.65	32
10.80	16	16	32	0	21.52	32
10.90	16	16	31	0	21.39	31
11.00	16	16	31	0	21.26	31
11.10	15	15	31	0	21.13	31
11.20	15	15	30	0	21.01	30
11.30	15	15	30	0	20.88	30
11.40	15	15	30	0	20.76	30
11.50	15	15	30	0	20.64	30
11.60	14	14	29	0	20.51	29
11.70	14	14	29	0	20.39	29
11.80	14	14	29	0	20.27	29
11.90	14	14	28	0	20.15	28

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

SERENO PARK DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 303

TOTAL OUTFLOW AT CP 304

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
12.00	14	14	28	0	20.04	28
12.10	13	14	28	0	19.92	28
12.20	13	13	27	0	19.80	27
12.30	13	13	27	0	19.69	27
12.40	13	13	27	0	19.57	27
12.50	13	13	27	0	19.46	27
12.60	13	13	26	0	19.35	26
12.70	12	12	26	0	19.23	26
12.80	12	12	26	0	19.12	26
12.90	12	12	25	0	19.01	25
13.00	12	12	25	0	18.91	25
13.10	12	12	25	0	18.80	25
13.20	12	12	25	0	18.69	25
13.30	12	12	24	0	18.59	24
13.40	11	11	24	0	18.48	24
13.50	11	11	24	0	18.38	24
13.60	11	11	24	0	18.27	24
13.70	11	11	23	0	18.17	23
13.80	11	11	23	0	18.07	23
13.90	11	11	23	0	17.97	23
14.00	11	11	23	0	17.87	23
14.10	10	10	22	0	17.77	22
14.20	10	10	22	0	17.67	22
14.30	10	10	22	0	17.58	22
14.40	10	10	22	0	17.48	22
14.50	10	10	22	0	17.38	22
14.60	10	10	21	0	17.29	21
14.70	10	10	21	0	17.20	21
14.80	10	10	21	0	17.10	21
14.90	9	10	21	0	17.01	21
15.00	9	9	20	0	16.92	20
15.10	9	9	20	0	16.83	20
15.20	9	9	20	0	16.74	20
15.30	9	9	20	0	16.65	20
15.40	9	9	20	0	16.56	20
15.50	9	9	19	0	16.48	19
15.60	9	9	19	0	16.39	19
15.70	9	9	19	0	16.30	19
15.80	9	9	19	0	16.22	19
15.90	8	8	19	0	16.13	19
16.00	8	8	18	0	16.05	18
16.10	8	8	18	0	15.97	18
16.20	8	8	18	0	15.89	18
16.30	8	8	18	0	15.80	18
16.40	8	8	18	0	15.72	18
16.50	8	8	18	0	15.64	18
16.60	8	8	17	0	15.56	17
16.70	8	8	17	0	15.49	17
16.80	8	8	17	0	15.41	17
16.90	8	8	17	0	15.33	17
17.00	7	7	17	0	15.26	17
17.10	7	7	17	0	15.18	17
17.20	7	7	16	0	15.10	16
17.30	7	7	16	0	15.03	16
17.40	7	7	16	0	14.96	16
17.50	7	7	16	0	14.88	16
17.60	7	7	16	0	14.81	16
17.70	7	7	16	0	14.74	16
17.80	7	7	15	0	14.67	15
17.90	7	7	15	0	14.60	15

Water Resources Associates, Inc.
Scottsdale, Arizona
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SERENO PARK DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 303

t	q	t	q
0.00	0	15.00	18
0.25	0	15.25	18
0.50	6	15.50	17
0.75	12	15.75	16
1.00	17	16.00	16
1.25	18	16.25	15
1.50	21	16.50	15
1.75	22	16.75	14
2.00	23	17.00	14
2.25	25	17.25	13
2.50	26	17.50	13
2.75	26	17.75	13
3.00	27	18.00	12
3.25	28	18.25	12
3.50	30	18.50	11
3.75	37	18.75	11
4.00	82	19.00	11
4.25	117	19.25	10
4.50	292	19.50	10
4.75	261	19.75	10
5.00	116	20.00	9
5.25	109	20.25	9
5.50	171	20.50	9
5.75	293	20.75	9
6.00	145	21.00	8
6.25	113	21.25	8
6.50	87	21.50	8
6.75	85	21.75	8
7.00	74	22.00	8
7.25	68	22.25	7
7.50	66	22.50	7
7.75	63	22.75	7
8.00	60	23.00	7
8.25	57	23.25	7
8.50	55	23.50	6
8.75	52	23.75	6
9.00	50	24.00	6
9.25	47	24.25	6
9.50	45	24.50	6
9.75	43	24.75	6
10.00	41	25.00	5
10.25	39	25.25	5
10.50	37	25.50	5
10.75	36	25.75	5
11.00	34	26.00	5
11.25	33	26.25	0
11.50	31	26.50	0
11.75	30	26.75	0
12.00	29	27.00	0
12.25	28	27.25	0
12.50	27	27.50	0
12.75	26	27.75	0
13.00	25	28.00	0
13.25	24	28.25	0
13.50	23	28.50	0
13.75	22	28.75	0
14.00	21	29.00	0
14.25	20	29.25	0
14.50	20	29.50	0
14.75	19	29.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

SERENO PARK DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

TOTAL OUTFLOW AT CP 304

t	q	t	q
0.00	0	15.00	36
0.25	0	15.25	35
0.50	1	15.50	34
0.75	1	15.75	33
1.00	1	16.00	32
1.25	1	16.25	31
1.50	1	16.50	31
1.75	2	16.75	30
2.00	2	17.00	29
2.25	2	17.25	28
2.50	2	17.50	27
2.75	2	17.75	27
3.00	3	18.00	26
3.25	3	18.25	25
3.50	4	18.50	25
3.75	4	18.75	24
4.00	4	19.00	23
4.25	5	19.25	23
4.50	12	19.50	22
4.75	24	19.75	21
5.00	32	20.00	21
5.25	36	20.25	20
5.50	42	20.50	20
5.75	54	20.75	19
6.00	64	21.00	19
6.25	68	21.25	18
6.50	70	21.50	18
6.75	71	21.75	17
7.00	72	22.00	17
7.25	72	22.25	17
7.50	72	22.50	16
7.75	71	22.75	16
8.00	70	23.00	15
8.25	70	23.25	15
8.50	69	23.50	15
8.75	68	23.75	14
9.00	67	24.00	14
9.25	65	24.25	14
9.50	64	24.50	13
9.75	63	24.75	13
10.00	62	25.00	13
10.25	60	25.25	12
10.50	59	25.50	12
10.75	57	25.75	12
11.00	56	26.00	12
11.25	55	26.25	11
11.50	53	26.50	11
11.75	52	26.75	10
12.00	50	27.00	10
12.25	49	27.25	10
12.50	48	27.50	9
12.75	47	27.75	9
13.00	45	28.00	9
13.25	44	28.25	8
13.50	43	28.50	8
13.75	42	28.75	8
14.00	41	29.00	7
14.25	39	29.25	7
14.50	38	29.50	7
14.75	37	29.75	7

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-4

Frequency in years 100
Drainage area in sq. mi. 0.791
Length in ft. 5280
Elevation, ft. msl:
    Top of Basin 1415
    Bottom of Basin 1386
Basin Slope in % 0.5
Basin Width in ft. 4400
Time of Concentraion in hrs. 0.69
Precipitation:
    Duration in hrs. 0.69
    Point Precipitation in inches 2.35
    Rainfall intensity in./hr. 3.41
Pervious Area in sq. mi. 0.396
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.395
Curve Number 96
Runoff (Q) in inches 1.92
Time of Peak in hrs. 0.46
Peak Discharge in cfs 1598
Runoff Volume in af. 81

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 305

t	q	t	q	t	q
0.00	0	6.00	53	12.00	29
0.10	111	6.10	53	12.10	29
0.20	351	6.20	52	12.20	28
0.30	717	6.30	52	12.30	28
0.40	938	6.40	51	12.40	28
0.50	958	6.50	51	12.50	27
0.60	831	6.60	50	12.60	27
0.70	646	6.70	50	12.70	27
0.80	440	6.80	49	12.80	27
0.90	318	6.90	49	12.90	26
1.00	239	7.00	49	13.00	26
1.10	176	7.10	48	13.10	26
1.20	135	7.20	48	13.20	25
1.30	106	7.30	47	13.30	25
1.40	89	7.40	47	13.40	25
1.50	81	7.50	46	13.50	25
1.60	77	7.60	46	13.60	24
1.70	74	7.70	45	13.70	24
1.80	71	7.80	45	13.80	24
1.90	70	7.90	44	13.90	24
2.00	69	8.00	44	14.00	23
2.10	66	8.10	44	14.10	23
2.20	64	8.20	43	14.20	23
2.30	62	8.30	43	14.30	23
2.40	62	8.40	42	14.40	22
2.50	62	8.50	42	14.50	22
2.60	63	8.60	41	14.60	22
2.70	63	8.70	41	14.70	22
2.80	63	8.80	41	14.80	22
2.90	63	8.90	40	14.90	21
3.00	62	9.00	40	15.00	21
3.10	62	9.10	39	15.10	21
3.20	62	9.20	39	15.20	21
3.30	62	9.30	38	15.30	20
3.40	62	9.40	38	15.40	20
3.50	62	9.50	38	15.50	20
3.60	62	9.60	37	15.60	20
3.70	61	9.70	37	15.70	20
3.80	61	9.80	37	15.80	19
3.90	61	9.90	36	15.90	19
4.00	61	10.00	36	16.00	19
4.10	60	10.10	35	16.10	19
4.20	60	10.20	35	16.20	19
4.30	60	10.30	35	16.30	18
4.40	59	10.40	34	16.40	18
4.50	59	10.50	34	16.50	18
4.60	59	10.60	34	16.60	18
4.70	58	10.70	33	16.70	18
4.80	58	10.80	33	16.80	18
4.90	57	10.90	32	16.90	17
5.00	57	11.00	32	17.00	17
5.10	57	11.10	32	17.10	17
5.20	56	11.20	31	17.20	17
5.30	56	11.30	31	17.30	17
5.40	56	11.40	31	17.40	17
5.50	55	11.50	30	17.50	16
5.60	55	11.60	30	17.60	16
5.70	54	11.70	30	17.70	16
5.80	54	11.80	30	17.80	16
5.90	54	11.90	30	17.90	16

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 305

NO PROJECT

t	q
0.00	0
0.10	111
0.20	351
0.30	713
0.40	1055
0.50	1849
0.60	2424
0.70	1962
0.80	1514
0.90	1279
1.00	1114
1.10	929
1.20	741
1.30	536
1.40	368
1.50	263
1.60	193
1.70	138
1.80	99
1.90	71
2.00	51
2.10	36
2.20	26
2.30	17
2.40	12
2.50	9
2.60	7
2.70	5
2.80	4
2.90	2
3.00	1
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 305

t	q	t	q
0.00	0	15.00	37
0.25	0	15.25	36
0.50	10	15.50	35
0.75	22	15.75	34
1.00	32	16.00	33
1.25	34	16.25	32
1.50	37	16.50	31
1.75	39	16.75	31
2.00	42	17.00	30
2.25	44	17.25	29
2.50	46	17.50	28
2.75	47	17.75	27
3.00	48	18.00	27
3.25	50	18.25	26
3.50	51	18.50	25
3.75	65	18.75	25
4.00	147	19.00	24
4.25	210	19.25	23
4.50	530	19.50	23
4.75	454	19.75	22
5.00	167	20.00	21
5.25	135	20.25	21
5.50	107	20.50	20
5.75	89	20.75	20
6.00	97	21.00	19
6.25	104	21.25	19
6.50	105	21.50	18
6.75	101	21.75	18
7.00	81	22.00	17
7.25	72	22.25	17
7.50	72	22.50	17
7.75	72	22.75	16
8.00	71	23.00	16
8.25	70	23.25	15
8.50	70	23.50	15
8.75	69	23.75	15
9.00	68	24.00	14
9.25	67	24.25	14
9.50	65	24.50	14
9.75	64	24.75	13
10.00	63	25.00	13
10.25	62	25.25	13
10.50	60	25.50	12
10.75	59	25.75	12
11.00	57	26.00	12
11.25	56	26.25	12
11.50	55	26.50	11
11.75	53	26.75	11
12.00	52	27.00	10
12.25	50	27.25	10
12.50	49	27.50	10
12.75	48	27.75	9
13.00	47	28.00	9
13.25	45	28.25	9
13.50	44	28.50	8
13.75	43	28.75	8
14.00	42	29.00	8
14.25	41	29.25	7
14.50	39	29.50	7
14.75	38	29.75	7

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-5

Frequency in years 100
Drainage area in sq. mi. 0.499
Length in ft. 5280
Elevation, ft. msl:
    Top of Basin 1386
    Bottom of Basin 1356
Basin Slope in % 0.6
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.68
Precipitation:
    Duration in hrs. 0.68
    Point Precipitation in inches 2.35
    Rainfall intensity in./hr. 3.46
Pervious Area in sq. mi. 0.250
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.249
Curve Number 96
Runoff (Q) in inches 1.93
Time of Peak in hrs. 0.45
Peak Discharge in cfs 1025
Runoff Volume in af. 51

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-7

Frequency in years 100
Drainage area in sq. mi. 0.190
Length in ft. 2640
Elevation, ft. msl:
    Top of Basin 1356
    Bottom of Basin 1333
Basin Slope in % 0.9
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.34
Precipitation:
    Duration in hrs. 0.34
    Point Precipitation in inches 1.77
    Rainfall intensity in./hr. 5.21
Pervious Area in sq. mi. 0.095
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.095
Curve Number 98
Runoff (Q) in inches 1.50
Time of Peak in hrs. 0.23
Peak Discharge in cfs 610
Runoff Volume in af. 15

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 307

t	q	t	q	t	q
0.00	0	6.00	54	12.00	30
0.10	223	6.10	54	12.10	29
0.20	593	6.20	53	12.20	29
0.30	645	6.30	53	12.30	29
0.40	655	6.40	52	12.40	28
0.50	1029	6.50	52	12.50	28
0.60	1428	6.60	51	12.60	28
0.70	1758	6.70	51	12.70	27
0.80	1810	6.80	50	12.80	27
0.90	1597	6.90	50	12.90	27
1.00	1260	7.00	49	13.00	27
1.10	940	7.10	49	13.10	26
1.20	649	7.20	49	13.20	26
1.30	462	7.30	48	13.30	26
1.40	340	7.40	48	13.40	25
1.50	246	7.50	47	13.50	25
1.60	184	7.60	47	13.60	25
1.70	144	7.70	46	13.70	25
1.80	119	7.80	46	13.80	24
1.90	103	7.90	45	13.90	24
2.00	93	8.00	45	14.00	24
2.10	85	8.10	44	14.10	24
2.20	79	8.20	44	14.20	23
2.30	74	8.30	44	14.30	23
2.40	70	8.40	43	14.40	23
2.50	66	8.50	43	14.50	23
2.60	64	8.60	42	14.60	22
2.70	62	8.70	42	14.70	22
2.80	62	8.80	41	14.80	22
2.90	63	8.90	41	14.90	22
3.00	63	9.00	41	15.00	22
3.10	63	9.10	40	15.10	21
3.20	63	9.20	40	15.20	21
3.30	62	9.30	39	15.30	21
3.40	62	9.40	39	15.40	21
3.50	62	9.50	38	15.50	20
3.60	62	9.60	38	15.60	20
3.70	62	9.70	38	15.70	20
3.80	62	9.80	37	15.80	20
3.90	62	9.90	37	15.90	20
4.00	61	10.00	37	16.00	19
4.10	61	10.10	36	16.10	19
4.20	61	10.20	36	16.20	19
4.30	61	10.30	35	16.30	19
4.40	60	10.40	35	16.40	19
4.50	60	10.50	35	16.50	18
4.60	60	10.60	34	16.60	18
4.70	59	10.70	34	16.70	18
4.80	59	10.80	34	16.80	18
4.90	59	10.90	33	16.90	18
5.00	58	11.00	33	17.00	18
5.10	58	11.10	32	17.10	17
5.20	57	11.20	32	17.20	17
5.30	57	11.30	32	17.30	17
5.40	57	11.40	31	17.40	17
5.50	56	11.50	31	17.50	17
5.60	56	11.60	31	17.60	17
5.70	55	11.70	30	17.70	16
5.80	55	11.80	30	17.80	16
5.90	54	11.90	30	17.90	16

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 307

NO PROJECT

t	q
0.00	0
0.10	334
0.20	944
0.30	1358
0.40	1711
0.50	2767
0.60	3497
0.70	3001
0.80	2384
0.90	1916
1.00	1534
1.10	1217
1.20	946
1.30	678
1.40	468
1.50	332
1.60	240
1.70	172
1.80	123
1.90	87
2.00	62
2.10	45
2.20	31
2.30	21
2.40	14
2.50	9
2.60	7
2.70	5
2.80	4
2.90	2
3.00	1
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 307

t	q	t	q
0.00	0	15.00	41
0.25	4	15.25	39
0.50	8	15.50	38
0.75	24	15.75	37
1.00	35	16.00	36
1.25	58	16.25	35
1.50	72	16.50	34
1.75	86	16.75	33
2.00	91	17.00	32
2.25	96	17.25	31
2.50	101	17.50	31
2.75	106	17.75	30
3.00	109	18.00	29
3.25	113	18.25	28
3.50	120	18.50	27
3.75	156	18.75	27
4.00	196	19.00	26
4.25	412	19.25	25
4.50	459	19.50	25
4.75	757	19.75	24
5.00	716	20.00	23
5.25	710	20.25	23
5.50	581	20.50	22
5.75	259	20.75	21
6.00	201	21.00	21
6.25	167	21.25	20
6.50	144	21.50	20
6.75	139	21.75	19
7.00	137	22.00	19
7.25	116	22.25	18
7.50	101	22.50	18
7.75	81	22.75	17
8.00	72	23.00	17
8.25	72	23.25	17
8.50	72	23.50	16
8.75	71	23.75	16
9.00	70	24.00	15
9.25	70	24.25	15
9.50	69	24.50	15
9.75	68	24.75	14
10.00	67	25.00	14
10.25	65	25.25	14
10.50	64	25.50	13
10.75	63	25.75	13
11.00	62	26.00	13
11.25	60	26.25	12
11.50	59	26.50	12
11.75	57	26.75	12
12.00	56	27.00	12
12.25	55	27.25	11
12.50	53	27.50	11
12.75	52	27.75	10
13.00	50	28.00	10
13.25	49	28.25	10
13.50	48	28.50	9
13.75	47	28.75	9
14.00	45	29.00	9
14.25	44	29.25	8
14.50	43	29.50	8
14.75	42	29.75	8

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 306

t	q
0.00	0
0.10	74
0.20	234
0.30	475
0.40	621
0.50	634
0.60	547
0.70	418
0.80	277
0.90	193
1.00	138
1.10	96
1.20	68
1.30	47
1.40	33
1.50	23
1.60	17
1.70	12
1.80	8
1.90	6
2.00	4
2.10	3
2.20	1
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 306

NO PROJECT

t	q
0.00	0
0.10	74
0.20	234
0.30	475
0.40	621
0.50	634
0.60	547
0.70	418
0.80	277
0.90	193
1.00	138
1.10	96
1.20	68
1.30	47
1.40	33
1.50	23
1.60	17
1.70	12
1.80	8
1.90	6
2.00	4
2.10	3
2.20	1
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 306

t	q
0.00	0
0.25	0
0.50	7
0.75	14
1.00	21
1.25	22
1.50	24
1.75	25
2.00	27
2.25	28
2.50	29
2.75	30
3.00	30
3.25	31
3.50	32
3.75	41
4.00	96
4.25	137
4.50	350
4.75	295
5.00	96
5.25	68
5.50	47
5.75	32
6.00	28
6.25	27
6.50	24
6.75	21
7.00	7
7.25	0
7.50	0
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-6

Frequency in years 100
Drainage area in sq. mi. 0.447
Length in ft. 5280
Elevation, ft. msl:
Top of Basin 1387
Bottom of Basin 1358
Basin Slope in % 0.5
Basin Width in ft. 2300
Time of Concentraion in hrs. 0.69
Precipitation:
Duration in hrs. 0.69
Point Precipitation in inches 2.36
Rainfall intensity in./hr. 3.42
Pervious Area in sq. mi. 0.224
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.223
Curve Number 96
Runoff (Q) in inches 1.93
Time of Peak in hrs. 0.46
Peak Discharge in cfs 908
Runoff Volume in af. 46

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-8

Frequency in years 100
Drainage area in sq. mi. 0.568
Length in ft. 5300
Elevation, ft. msl:
    Top of Basin 1358
    Bottom of Basin 1320
Basin Slope in % 0.7
Basin Width in ft. 3300
Time of Concentraion in hrs. 0.63
Precipitation:
    Duration in hrs. 0.63
    Point Precipitation in inches 2.27
    Rainfall intensity in./hr. 3.63
Pervious Area in sq. mi. 0.284
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.284
Curve Number 96
Runoff (Q) in inches 1.87
Time of Peak in hrs. 0.42
Peak Discharge in cfs 1234
Runoff Volume in af. 57

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 308

t	q
0.00	0
0.10	166
0.20	533
0.30	1031
0.40	1333
0.50	1487
0.60	1602
0.70	1565
0.80	1539
0.90	1534
1.00	1403
1.10	1155
1.20	909
1.30	674
1.40	453
1.50	316
1.60	224
1.70	155
1.80	110
1.90	77
2.00	52
2.10	35
2.20	25
2.30	18
2.40	12
2.50	8
2.60	4
2.70	3
2.80	1
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 308

NO PROJECT

t	q
0.00	0
0.10	166
0.20	533
0.30	1031
0.40	1333
0.50	1487
0.60	1602
0.70	1565
0.80	1539
0.90	1534
1.00	1403
1.10	1155
1.20	909
1.30	674
1.40	453
1.50	316
1.60	224
1.70	155
1.80	110
1.90	77
2.00	52
2.10	35
2.20	25
2.30	18
2.40	12
2.50	8
2.60	4
2.70	3
2.80	1
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.30	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 308

t	q
0.00	0
0.25	12
0.50	25
0.75	47
1.00	66
1.25	86
1.50	98
1.75	104
2.00	109
2.25	116
2.50	120
2.75	123
3.00	127
3.25	131
3.50	147
3.75	248
4.00	336
4.25	805
4.50	819
4.75	804
5.00	890
5.25	515
5.50	249
5.75	187
6.00	140
6.25	116
6.50	104
6.75	74
7.00	54
7.25	31
7.50	7
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-3

Frequency in years 100
Drainage area in sq. mi. 0.119
Length in ft. 4500
Elevation, ft. msl:
    Top of Basin 1518
    Bottom of Basin 1473
Basin Slope in % 1.0
Basin Width in ft. 800
Time of Concentraion in hrs. 0.49
Precipitation:
    Duration in hrs. 0.49
    Point Precipitation in inches 2.06
    Rainfall intensity in./hr. 4.24
Pervious Area in sq. mi. 0.059
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.060
Curve Number 97
Runoff (Q) in inches 1.73
Time of Peak in hrs. 0.32
Peak Discharge in cfs 307
Runoff Volume in af. 11

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-3a

Frequency in years 100
Drainage area in sq. mi. 0.060
Length in ft. 2800
Elevation, ft. msl:
    Top of Basin 1473
    Bottom of Basin 1450
Basin Slope in % 0.8
Basin Width in ft. 550
Time of Concentraion in hrs. 0.36
Precipitation:
    Duration in hrs. 0.36
    Point Precipitation in inches 1.87
    Rainfall intensity in./hr. 5.14
Pervious Area in sq. mi. 0.030
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.030
Curve Number 97
Runoff (Q) in inches 1.58
Time of Peak in hrs. 0.24
Peak Discharge in cfs 190
Runoff Volume in af. 5

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-4

Frequency in years 100
Drainage area in sq. mi. 0.544
Length in ft. 7950
Elevation, ft. msl:
    Top of Basin 1518
    Bottom of Basin 1446
Basin Slope in % 0.9
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.78
Precipitation:
    Duration in hrs. 0.78
    Point Precipitation in inches 2.49
    Rainfall intensity in./hr. 3.18
Pervious Area in sq. mi. 0.272
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.272
Curve Number 96
Runoff (Q) in inches 2.02
Time of Peak in hrs. 0.52
Peak Discharge in cfs 1018
Runoff Volume in af. 58

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-5

Frequency in years 100
Drainage area in sq. mi. 0.148
Length in ft. 1800
Elevation, ft. msl:
Top of Basin 1450
Bottom of Basin 1440
Basin Slope in % 0.6
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.30
Precipitation:
Duration in hrs. 0.30
Point Precipitation in inches 1.65
Rainfall intensity in./hr. 5.50
Pervious Area in sq. mi. 0.074
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.074
Curve Number 98
Runoff (Q) in inches 1.41
Time of Peak in hrs. 0.20
Peak Discharge in cfs 504
Runoff Volume in af. 11

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 201

t	q
0.00	0
0.10	237
0.20	600
0.30	704
0.40	949
0.50	1146
0.60	1199
0.70	1250
0.80	1173
0.90	935
1.00	638
1.10	433
1.20	309
1.30	218
1.40	153
1.50	109
1.60	77
1.70	55
1.80	40
1.90	29
2.00	21
2.10	14
2.20	11
2.30	8
2.40	6
2.50	4
2.60	2
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 201

NO PROJECT

t	q
0.00	0
0.10	237
0.20	664
0.30	884
0.40	1153
0.50	1375
0.60	1364
0.70	1197
0.80	962
0.90	719
1.00	488
1.10	349
1.20	257
1.30	186
1.40	134
1.50	98
1.60	71
1.70	51
1.80	37
1.90	27
2.00	20
2.10	14
2.20	11
2.30	8
2.40	6
2.50	4
2.60	2
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 201

t	q
0.00	0
0.25	3
0.50	8
0.75	15
1.00	33
1.25	49
1.50	64
1.75	68
2.00	72
2.25	77
2.50	80
2.75	83
3.00	86
3.25	88
3.50	94
3.75	123
4.00	158
4.25	302
4.50	435
4.75	490
5.00	819
5.25	625
5.50	229
5.75	165
6.00	119
6.25	87
6.50	78
6.75	67
7.00	55
7.25	42
7.50	13
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-1

Frequency in years 100
Drainage area in sq. mi. 0.152
Length in ft. 2500
Elevation, ft. msl:
Top of Basin 1516
Bottom of Basin 1492
Basin Slope in % 1.0
Basin Width in ft. 1850
Time of Concentraion in hrs. 0.31
Precipitation:
Duration in hrs. 0.31
Point Precipitation in inches 1.77
Rainfall intensity in./hr. 5.65
Pervious Area in sq. mi. 0.076
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.076
Curve Number 98
Runoff (Q) in inches 1.51
Time of Peak in hrs. 0.21
Peak Discharge in cfs 532
Runoff Volume in af. 12

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-2

Frequency in years 100
Drainage area in sq. mi. 0.289
Length in ft. 4300
Elevation, ft. msl:
Top of Basin 1517
Bottom of Basin 1475
Basin Slope in % 1.0
Basin Width in ft. 2500
Time of Concentraion in hrs. 0.47
Precipitation:
Duration in hrs. 0.47
Point Precipitation in inches 2.06
Rainfall intensity in./hr. 4.36
Pervious Area in sq. mi. 0.144
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.145
Curve Number 97
Runoff (Q) in inches 1.73
Time of Peak in hrs. 0.32
Peak Discharge in cfs 767
Runoff Volume in af. 27

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-6

Frequency in years 100
Drainage area in sq. mi. 1.508
Length in ft. 4600
Elevation, ft. msl:
Top of Basin 1475
Bottom of Basin 1434
Basin Slope in % 0.9
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.68
Precipitation:
Duration in hrs. 0.68
Point Precipitation in inches 2.24
Rainfall intensity in./hr. 3.31
Pervious Area in sq. mi. 0.754
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.754
Curve Number 96
Runoff (Q) in inches 1.82
Time of Peak in hrs. 0.45
Peak Discharge in cfs 2952
Runoff Volume in af. 147

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-7

Frequency in years 100
Drainage area in sq. mi. 0.238
Length in ft. 3550
Elevation, ft. msl:
Top of Basin 1495
Bottom of Basin 1461
Basin Slope in % 1.0
Basin Width in ft. 1800
Time of Concentraion in hrs. 0.41
Precipitation:
Duration in hrs. 0.41
Point Precipitation in inches 1.96
Rainfall intensity in./hr. 4.76
Pervious Area in sq. mi. 0.119
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.119
Curve Number 97
Runoff (Q) in inches 1.65
Time of Peak in hrs. 0.27
Peak Discharge in cfs 694
Runoff Volume in af. 21

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-8

Frequency in years 100
Drainage area in sq. mi. 0.254
Length in ft. 3860
Elevation, ft. msl:
Top of Basin 1468
Bottom of Basin 1444
Basin Slope in % 0.6
Basin Width in ft. 2000
Time of Concentraion in hrs. 0.52
Precipitation:
Duration in hrs. 0.52
Point Precipitation in inches 2.14
Rainfall intensity in./hr. 4.13
Pervious Area in sq. mi. 0.127
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.127
Curve Number 97
Runoff (Q) in inches 1.78
Time of Peak in hrs. 0.34
Peak Discharge in cfs 636
Runoff Volume in af. 24

68TH STREET AND HEARN ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 203

TOTAL OUTFLOW AT CP 202

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	354	177	2	0	1.45	2
0.20	1244	799	6	0	8.05	6
0.30	2669	1956	10	0	24.13	10
0.40	3526	3097	48	0	49.33	48
0.50	3694	3610	54	3151	52.68	3205
0.60	3669	3681	54	3628	52.68	3681
0.70	3524	3596	54	3542	52.68	3596
0.80	3138	3331	54	3277	52.68	3331
0.90	2264	2701	54	2647	52.68	2701
1.00	1432	1848	54	1794	52.68	1848
1.10	868	1150	54	1096	52.68	1150
1.20	551	710	54	656	52.68	710
1.30	351	451	54	397	52.68	451
1.40	225	288	54	234	52.68	288
1.50	149	187	54	133	52.68	187
1.60	97	123	54	69	52.68	123
1.70	62	80	54	26	52.63	80
1.80	40	51	54	0	52.66	54
1.90	30	35	54	0	52.50	54
2.00	19	24	54	0	52.26	54
2.10	10	14	53	0	51.94	53
2.20	3	7	53	0	51.56	53
2.30	0	2	52	0	51.14	52
2.40	0	0	51	0	50.72	51
2.50	0	0	50	0	50.31	50
2.60	0	0	49	0	49.90	49
2.70	0	0	49	0	49.50	49
2.80	0	0	48	0	49.10	48
2.90	0	0	47	0	48.71	47
3.00	0	0	46	0	48.33	46
3.10	0	0	46	0	47.95	46
3.20	0	0	45	0	47.58	45
3.30	0	0	44	0	47.22	44
3.40	0	0	44	0	46.86	44
3.50	0	0	43	0	46.50	43
3.60	0	0	42	0	46.15	42
3.70	0	0	42	0	45.81	42
3.80	0	0	41	0	45.47	41
3.90	0	0	41	0	45.13	41
4.00	0	0	40	0	44.80	40
4.10	0	0	39	0	44.48	39
4.20	0	0	39	0	44.16	39
4.30	0	0	38	0	43.84	38
4.40	0	0	38	0	43.53	38
4.50	0	0	37	0	43.22	37
4.60	0	0	37	0	42.92	37
4.70	0	0	36	0	42.62	36
4.80	0	0	36	0	42.33	36
4.90	0	0	35	0	42.03	35
5.00	0	0	35	0	41.75	35
5.10	0	0	34	0	41.47	34
5.20	0	0	34	0	41.19	34
5.30	0	0	33	0	40.91	33
5.40	0	0	33	0	40.64	33
5.50	0	0	32	0	40.37	32
5.60	0	0	32	0	40.11	32
5.70	0	0	32	0	39.85	32
5.80	0	0	31	0	39.59	31
5.90	0	0	31	0	39.34	31

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

68TH STREET AND HEARN ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 203
TOTAL OUTFLOW AT CP 202

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	30	0	39.09	30
6.10	0	0	30	0	38.84	30
6.20	0	0	30	0	38.60	30
6.30	0	0	29	0	38.35	29
6.40	0	0	29	0	38.12	29
6.50	0	0	28	0	37.88	28
6.60	0	0	28	0	37.65	28
6.70	0	0	28	0	37.42	28
6.80	0	0	27	0	37.19	27
6.90	0	0	27	0	36.97	27
7.00	0	0	27	0	36.75	27
7.10	0	0	26	0	36.53	26
7.20	0	0	26	0	36.32	26
7.30	0	0	26	0	36.10	26
7.40	0	0	25	0	35.89	25
7.50	0	0	25	0	35.69	25
7.60	0	0	25	0	35.48	25
7.70	0	0	25	0	35.28	25
7.80	0	0	24	0	35.08	24
7.90	0	0	24	0	34.88	24
8.00	0	0	24	0	34.68	24
8.10	0	0	23	0	34.49	23
8.20	0	0	23	0	34.30	23
8.30	0	0	23	0	34.11	23
8.40	0	0	23	0	33.93	23
8.50	0	0	22	0	33.74	22
8.60	0	0	22	0	33.56	22
8.70	0	0	22	0	33.38	22
8.80	0	0	22	0	33.20	22
8.90	0	0	21	0	33.02	21
9.00	0	0	21	0	32.85	21
9.10	0	0	21	0	32.68	21
9.20	0	0	21	0	32.51	21
9.30	0	0	20	0	32.34	20
9.40	0	0	20	0	32.17	20
9.50	0	0	20	0	32.01	20
9.60	0	0	20	0	31.84	20
9.70	0	0	19	0	31.68	19
9.80	0	0	19	0	31.52	19
9.90	0	0	19	0	31.37	19
10.00	0	0	19	0	31.21	19
10.10	0	0	19	0	31.06	19
10.20	0	0	18	0	30.90	18
10.30	0	0	18	0	30.75	18
10.40	0	0	18	0	30.60	18
10.50	0	0	18	0	30.46	18
10.60	0	0	18	0	30.31	18
10.70	0	0	18	0	30.16	18
10.80	0	0	17	0	30.02	17
10.90	0	0	17	0	29.88	17
11.00	0	0	17	0	29.74	17
11.10	0	0	17	0	29.60	17
11.20	0	0	17	0	29.46	17
11.30	0	0	16	0	29.33	16
11.40	0	0	16	0	29.19	16
11.50	0	0	16	0	29.06	16
11.60	0	0	16	0	28.93	16
11.70	0	0	16	0	28.80	16
11.80	0	0	16	0	28.67	16
11.90	0	0	15	0	28.54	15

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 202

NO PROJECT

t	q
0.00	0
0.10	354
0.20	1127
0.30	2263
0.40	3060
0.50	3440
0.60	3222
0.70	2497
0.80	1661
0.90	1091
1.00	754
1.10	505
1.20	344
1.30	233
1.40	159
1.50	109
1.60	75
1.70	51
1.80	35
1.90	25
2.00	17
2.10	10
2.20	3
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.30	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

68TH STREET AND HEARN DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 203

t	q
0.00	0
0.25	0
0.50	39
0.75	89
1.00	143
1.25	165
1.50	179
1.75	191
2.00	203
2.25	212
2.50	221
2.75	227
3.00	233
3.25	238
3.50	246
3.75	296
4.00	616
4.25	943
4.50	2225
4.75	2292
5.00	1192
5.25	681
5.50	424
5.75	288
6.00	234
6.25	212
6.50	194
6.75	170
7.00	85
7.25	22
7.50	3
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

66TH STREET AND HEARN DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

TOTAL OUTFLOW AT CP 202

t	q	t	q
0.00	0	15.00	20
0.25	0	15.25	19
0.50	1	15.50	19
0.75	2	15.75	18
1.00	3	16.00	18
1.25	4	16.25	17
1.50	5	16.50	17
1.75	6	16.75	16
2.00	7	17.00	16
2.25	9	17.25	16
2.50	14	17.50	15
2.75	19	17.75	15
3.00	25	18.00	14
3.25	32	18.25	14
3.50	39	18.50	14
3.75	47	18.75	13
4.00	242	19.00	13
4.25	780	19.25	13
4.50	1584	19.50	13
4.75	2258	19.75	12
5.00	1742	20.00	12
5.25	936	20.25	12
5.50	553	20.50	11
5.75	356	20.75	11
6.00	261	21.00	11
6.25	223	21.25	11
6.50	203	21.50	10
6.75	182	21.75	10
7.00	128	22.00	10
7.25	54	22.25	10
7.50	54	22.50	10
7.75	52	22.75	9
8.00	50	23.00	9
8.25	48	23.25	9
8.50	46	23.50	9
8.75	45	23.75	9
9.00	43	24.00	9
9.25	41	24.25	8
9.50	40	24.50	8
9.75	38	24.75	8
10.00	37	25.00	8
10.25	36	25.25	8
10.50	35	25.50	8
10.75	33	25.75	7
11.00	32	26.00	7
11.25	31	26.25	7
11.50	30	26.50	7
11.75	29	26.75	7
12.00	28	27.00	7
12.25	27	27.25	7
12.50	27	27.50	7
12.75	26	27.75	6
13.00	25	28.00	6
13.25	24	28.25	6
13.50	24	28.50	6
13.75	23	28.75	6
14.00	22	29.00	6
14.25	22	29.25	6
14.50	21	29.50	6
14.75	20	29.75	6

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-10

Frequency in years 100
Drainage area in sq. mi. 0.157
Length in ft. 2760
Elevation, ft. msl:
Top of Basin 1437
Bottom of Basin 1420
Basin Slope in % 0.6
Basin Width in ft. 1645
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 2.08
Rainfall intensity in./hr. 4.27
Pervious Area in sq. mi. 0.079
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.078
Curve Number 97
Runoff (Q) in inches 1.74
Time of Peak in hrs. 0.33
Peak Discharge in cfs 406
Runoff Volume in af. 15

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-11

Frequency in years 100
Drainage area in sq. mi. 0.095
Length in ft. 2680
Elevation, ft. msl:
Top of Basin 1434
Bottom of Basin 1417
Basin Slope in % 0.6
Basin Width in ft. 965
Time of Concentraion in hrs. 0.47
Precipitation:
Duration in hrs. 0.47
Point Precipitation in inches 2.04
Rainfall intensity in./hr. 4.36
Pervious Area in sq. mi. 0.048
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.047
Curve Number 97
Runoff (Q) in inches 1.71
Time of Peak in hrs. 0.31
Peak Discharge in cfs 252
Runoff Volume in af. 9

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 204

t	q	t	q
0.00	0	6.00	32
0.10	0	6.10	32
0.20	0	6.20	31
0.30	0	6.30	31
0.40	133	6.40	30
0.50	458	6.50	30
0.60	896	6.60	30
0.70	1203	6.70	29
0.80	1159	6.80	29
0.90	4386	6.90	28
1.00	4971	7.00	28
1.10	4880	7.10	28
1.20	4633	7.20	27
1.30	3905	7.30	27
1.40	2802	7.40	27
1.50	1800	7.50	26
1.60	1150	7.60	26
1.70	765	7.70	26
1.80	508	7.80	25
1.90	340	7.90	25
2.00	232	8.00	25
2.10	157	8.10	25
2.20	109	8.20	24
2.30	94	8.30	24
2.40	83	8.40	24
2.50	74	8.50	23
2.60	67	8.60	23
2.70	62	8.70	23
2.80	59	8.80	23
2.90	56	8.90	22
3.00	53	9.00	22
3.10	51	9.10	22
3.20	48	9.20	22
3.30	47	9.30	21
3.40	46	9.40	21
3.50	46	9.50	21
3.60	45	9.60	21
3.70	44	9.70	20
3.80	44	9.80	20
3.90	43	9.90	20
4.00	42	10.00	20
4.10	42	10.10	19
4.20	41	10.20	19
4.30	41	10.30	19
4.40	40	10.40	19
4.50	39	10.50	19
4.60	39	10.60	18
4.70	38	10.70	18
4.80	38	10.80	18
4.90	37	10.90	18
5.00	37	11.00	18
5.10	36	11.10	18
5.20	36	11.20	17
5.30	35	11.30	17
5.40	35	11.40	17
5.50	34	11.50	17
5.60	34	11.60	17
5.70	33	11.70	16
5.80	33	11.80	16
5.90	32	11.90	16

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 204

NO PROJECT

t	q
0.00	0
0.10	0
0.20	0
0.30	0
0.40	133
0.50	643
0.60	1250
0.70	1778
0.80	2587
0.90	3246
1.00	3945
1.10	4443
1.20	4308
1.30	3580
1.40	2574
1.50	1664
1.60	1128
1.70	783
1.80	530
1.90	365
2.00	249
2.10	171
2.20	119
2.30	83
2.40	55
2.50	36
2.60	25
2.70	17
2.80	10
2.90	3
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 204

t	q	t	q
0.00	0	15.00	20
0.25	0	15.25	20
0.50	3	15.50	19
0.75	14	15.75	19
1.00	28	16.00	18
1.25	52	16.25	18
1.50	71	16.50	17
1.75	89	16.75	17
2.00	95	17.00	16
2.25	102	17.25	16
2.50	108	17.50	16
2.75	117	17.75	15
3.00	126	18.00	15
3.25	135	18.25	14
3.50	144	18.50	14
3.75	158	18.75	14
4.00	203	19.00	13
4.25	477	19.25	13
4.50	1191	19.50	13
4.75	2299	19.75	13
5.00	2983	20.00	12
5.25	2636	20.25	12
5.50	1616	20.50	12
5.75	819	20.75	11
6.00	547	21.00	11
6.25	403	21.25	11
6.50	331	21.50	11
6.75	301	21.75	10
7.00	265	22.00	10
7.25	188	22.25	10
7.50	96	22.50	10
7.75	67	22.75	10
8.00	52	23.00	9
8.25	50	23.25	9
8.50	48	23.50	9
8.75	46	23.75	9
9.00	45	24.00	9
9.25	43	24.25	9
9.50	41	24.50	8
9.75	40	24.75	8
10.00	38	25.00	8
10.25	37	25.25	8
10.50	36	25.50	8
10.75	35	25.75	8
11.00	33	26.00	7
11.25	32	26.25	7
11.50	31	26.50	7
11.75	30	26.75	7
12.00	29	27.00	7
12.25	28	27.25	7
12.50	27	27.50	7
12.75	27	27.75	7
13.00	26	28.00	6
13.25	25	28.25	6
13.50	24	28.50	6
13.75	24	28.75	6
14.00	23	29.00	6
14.25	22	29.25	6
14.50	22	29.50	6
14.75	21	29.75	6

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-9

Frequency in years 100
Drainage area in sq. mi. 0.125
Length in ft. 1400
Elevation, ft. msl:
    Top of Basin 1432
    Bottom of Basin 1423
Basin Slope in % 0.6
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.24
Precipitation:
    Duration in hrs. 0.24
    Point Precipitation in inches 1.52
    Rainfall intensity in./hr. 6.25
Pervious Area in sq. mi. 0.063
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.062
Curve Number 98
Runoff (Q) in inches 1.30
Time of Peak in hrs. 0.16
Peak Discharge in cfs 487
Runoff Volume in af. 9

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-12

Frequency in years 100
Drainage area in sq. mi. 0.716
Length in ft. 5400
Elevation, ft. msl:
    Top of Basin 1422
    Bottom of Basin 1387
Basin Slope in % 0.6
Basin Width in ft. 3800
Time of Concentraion in hrs. 0.66
Precipitation:
    Duration in hrs. 0.66
    Point Precipitation in inches 2.32
    Rainfall intensity in./hr. 3.52
Pervious Area in sq. mi. 0.358
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.358
Curve Number 96
Runoff (Q) in inches 1.90
Time of Peak in hrs. 0.44
Peak Discharge in cfs 1499
Runoff Volume in af. 73

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 205

t	q
0.00	0
0.10	187
0.20	596
0.30	1186
0.40	1826
0.50	1887
0.60	1381
0.70	918
0.80	590
0.90	403
1.00	281
1.10	190
1.20	132
1.30	90
1.40	62
1.50	43
1.60	30
1.70	21
1.80	15
1.90	11
2.00	7
2.10	3
2.20	0
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 205

NO PROJECT

t	q
0.00	0
0.10	187
0.20	596
0.30	1186
0.40	2181
0.50	3014
0.60	3801
0.70	4357
0.80	4255
0.90	3549
1.00	2555
1.10	1652
1.20	1121
1.30	779
1.40	528
1.50	364
1.60	249
1.70	171
1.80	119
1.90	83
2.00	55
2.10	36
2.20	25
2.30	17
2.40	10
2.50	3
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 205

t	q
0.00	0
0.25	0
0.50	19
0.75	37
1.00	56
1.25	59
1.50	63
1.75	67
2.00	71
2.25	74
2.50	77
2.75	79
3.00	81
3.25	82
3.50	86
3.75	108
4.00	254
4.25	365
4.50	931
4.75	784
5.00	254
5.25	182
5.50	126
5.75	84
6.00	76
6.25	71
6.50	65
6.75	56
7.00	19
7.25	0
7.50	0
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-13

Frequency in years 100
Drainage area in sq. mi. 0.502
Length in ft. 5350
Elevation, ft. msl:
    Top of Basin 1387
    Bottom of Basin 1356
Basin Slope in % 0.6
Basin Width in ft. 2700
Time of Concentraion in hrs. 0.68
Precipitation:
    Duration in hrs. 0.68
    Point Precipitation in inches 2.37
    Rainfall intensity in./hr. 3.47
Pervious Area in sq. mi. 0.251
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.251
Curve Number 96
Runoff (Q) in inches 1.94
Time of Peak in hrs. 0.46
Peak Discharge in cfs 1036
Runoff Volume in af. 52

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-14

Frequency in years 100
Drainage area in sq. mi. 0.240
Length in ft. 2650
Elevation, ft. msl:
Top of Basin 1353
Bottom of Basin 1338
Basin Slope in % 0.6
Basin Width in ft. 2500
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 2.08
Rainfall intensity in./hr. 4.24
Pervious Area in sq. mi. 0.120
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.120
Curve Number 97
Runoff (Q) in inches 1.74
Time of Peak in hrs. 0.33
Peak Discharge in cfs 618
Runoff Volume in af. 22

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 208

t	q
0.00	0
0.10	120
0.20	414
0.30	732
0.40	949
0.50	1179
0.60	1428
0.70	1769
0.80	2161
0.90	2558
1.00	2368
1.10	1714
1.20	1154
1.30	753
1.40	517
1.50	360
1.60	245
1.70	170
1.80	117
1.90	81
2.00	56
2.10	40
2.20	28
2.30	19
2.40	13
2.50	7
2.60	3
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 208

NO PROJECT

t	q
0.00	0
0.10	120
0.20	534
0.30	992
0.40	1340
0.50	1416
0.60	1261
0.70	1220
0.80	1361
0.90	1688
1.00	2526
1.10	3258
1.20	3969
1.30	4474
1.40	4337
1.50	3606
1.60	2594
1.70	1679
1.80	1139
1.90	792
2.00	537
2.10	371
2.20	254
2.30	173
2.40	119
2.50	83
2.60	55
2.70	36
2.80	25
2.90	17
3.00	10
3.10	3
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 208

t	q
0.00	0
0.25	0
0.50	5
0.75	22
1.00	56
1.25	87
1.50	109
1.75	116
2.00	124
2.25	131
2.50	138
2.75	143
3.00	148
3.25	151
3.50	154
3.75	165
4.00	223
4.25	364
4.50	738
4.75	1144
5.00	1471
5.25	987
5.50	398
5.75	281
6.00	198
6.25	150
6.50	137
6.75	126
7.00	103
7.25	67
7.50	19
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 206

t	q	t	q
0.00	0	6.00	34
0.10	0	6.10	34
0.20	0	6.20	33
0.30	0	6.30	33
0.40	0	6.40	32
0.50	0	6.50	32
0.60	0	6.60	32
0.70	0	6.70	31
0.80	0	6.80	31
0.90	133	6.90	30
1.00	458	7.00	30
1.10	896	7.10	30
1.20	1203	7.20	29
1.30	1159	7.30	29
1.40	4386	7.40	28
1.50	4971	7.50	28
1.60	4880	7.60	28
1.70	4633	7.70	27
1.80	3905	7.80	27
1.90	2802	7.90	27
2.00	1800	8.00	26
2.10	1150	8.10	26
2.20	765	8.20	26
2.30	508	8.30	25
2.40	340	8.40	25
2.50	232	8.50	25
2.60	157	8.60	25
2.70	109	8.70	24
2.80	94	8.80	24
2.90	83	8.90	24
3.00	74	9.00	23
3.10	67	9.10	23
3.20	62	9.20	23
3.30	59	9.30	23
3.40	56	9.40	22
3.50	53	9.50	22
3.60	51	9.60	22
3.70	48	9.70	22
3.80	47	9.80	21
3.90	46	9.90	21
4.00	46	10.00	21
4.10	45	10.10	21
4.20	44	10.20	20
4.30	44	10.30	20
4.40	43	10.40	20
4.50	42	10.50	20
4.60	42	10.60	19
4.70	41	10.70	19
4.80	41	10.80	19
4.90	40	10.90	19
5.00	39	11.00	19
5.10	39	11.10	18
5.20	38	11.20	18
5.30	38	11.30	18
5.40	37	11.40	18
5.50	37	11.50	18
5.60	36	11.60	18
5.70	36	11.70	17
5.80	35	11.80	17
5.90	35	11.90	17

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 206

NO PROJECT

t	q
0.00	0
0.10	0
0.20	0
0.30	0
0.40	0
0.50	0
0.60	0
0.70	133
0.80	643
0.90	1250
1.00	1778
1.10	2587
1.20	3246
1.30	3945
1.40	4443
1.50	4308
1.60	3580
1.70	2574
1.80	1664
1.90	1128
2.00	783
2.10	530
2.20	365
2.30	249
2.40	171
2.50	119
2.60	83
2.70	55
2.80	36
2.90	25
3.00	17
3.10	10
3.20	3
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 206

t	q	t	q
0.00	0	15.00	22
0.25	0	15.25	21
0.50	0	15.50	20
0.75	0	15.75	20
1.00	3	16.00	19
1.25	14	16.25	19
1.50	28	16.50	18
1.75	52	16.75	18
2.00	71	17.00	17
2.25	89	17.25	17
2.50	95	17.50	16
2.75	102	17.75	16
3.00	108	18.00	16
3.25	117	18.25	15
3.50	126	18.50	15
3.75	135	18.75	14
4.00	144	19.00	14
4.25	158	19.25	14
4.50	203	19.50	13
4.75	477	19.75	13
5.00	1191	20.00	13
5.25	2299	20.25	13
5.50	2983	20.50	12
5.75	2636	20.75	12
6.00	1616	21.00	12
6.25	819	21.25	11
6.50	547	21.50	11
6.75	403	21.75	11
7.00	331	22.00	11
7.25	301	22.25	10
7.50	265	22.50	10
7.75	188	22.75	10
8.00	96	23.00	10
8.25	67	23.25	10
8.50	52	23.50	9
8.75	50	23.75	9
9.00	48	24.00	9
9.25	46	24.25	9
9.50	45	24.50	9
9.75	43	24.75	9
10.00	41	25.00	8
10.25	40	25.25	8
10.50	38	25.50	8
10.75	37	25.75	8
11.00	36	26.00	8
11.25	35	26.25	8
11.50	33	26.50	7
11.75	32	26.75	7
12.00	31	27.00	7
12.25	30	27.25	7
12.50	29	27.50	7
12.75	28	27.75	7
13.00	27	28.00	7
13.25	27	28.25	7
13.50	26	28.50	6
13.75	25	28.75	6
14.00	24	29.00	6
14.25	24	29.25	6
14.50	23	29.50	6
14.75	22	29.75	6

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 207

t	q	t	q
0.00	0	6.00	17
0.10	0	6.10	17
0.20	0	6.20	17
0.30	0	6.30	17
0.40	0	6.40	16
0.50	0	6.50	16
0.60	0	6.60	16
0.70	0	6.70	16
0.80	0	6.80	16
0.90	67	6.90	15
1.00	229	7.00	15
1.10	448	7.10	15
1.20	602	7.20	15
1.30	580	7.30	15
1.40	2193	7.40	14
1.50	2486	7.50	14
1.60	2440	7.60	14
1.70	2317	7.70	14
1.80	1953	7.80	14
1.90	1401	7.90	14
2.00	900	8.00	13
2.10	575	8.10	13
2.20	383	8.20	13
2.30	254	8.30	13
2.40	170	8.40	13
2.50	116	8.50	13
2.60	79	8.60	13
2.70	55	8.70	12
2.80	47	8.80	12
2.90	42	8.90	12
3.00	37	9.00	12
3.10	34	9.10	12
3.20	31	9.20	12
3.30	30	9.30	12
3.40	28	9.40	11
3.50	27	9.50	11
3.60	26	9.60	11
3.70	24	9.70	11
3.80	24	9.80	11
3.90	23	9.90	11
4.00	23	10.00	11
4.10	23	10.10	11
4.20	22	10.20	10
4.30	22	10.30	10
4.40	22	10.40	10
4.50	21	10.50	10
4.60	21	10.60	10
4.70	21	10.70	10
4.80	21	10.80	10
4.90	20	10.90	10
5.00	20	11.00	10
5.10	20	11.10	9
5.20	19	11.20	9
5.30	19	11.30	9
5.40	19	11.40	9
5.50	19	11.50	9
5.60	18	11.60	9
5.70	18	11.70	9
5.80	18	11.80	9
5.90	18	11.90	9

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 207

NO PROJECT

t	q
0.00	0
0.10	0
0.20	0
0.30	0
0.40	0
0.50	0
0.60	0
0.70	67
0.80	322
0.90	625
1.00	889
1.10	1294
1.20	1623
1.30	1972
1.40	2221
1.50	2154
1.60	1790
1.70	1287
1.80	832
1.90	564
2.00	392
2.10	265
2.20	182
2.30	125
2.40	85
2.50	60
2.60	41
2.70	28
2.80	18
2.90	12
3.00	8
3.10	5
3.20	2
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 207

t	q	t	q
0.00	0	15.00	11
0.25	0	15.25	10
0.50	0	15.50	10
0.75	0	15.75	10
1.00	2	16.00	10
1.25	7	16.25	9
1.50	14	16.50	9
1.75	26	16.75	9
2.00	35	17.00	9
2.25	44	17.25	8
2.50	48	17.50	8
2.75	51	17.75	8
3.00	54	18.00	8
3.25	59	18.25	8
3.50	63	18.50	7
3.75	68	18.75	7
4.00	72	19.00	7
4.25	79	19.25	7
4.50	101	19.50	7
4.75	238	19.75	7
5.00	596	20.00	6
5.25	1149	20.25	6
5.50	1492	20.50	6
5.75	1318	20.75	6
6.00	808	21.00	6
6.25	410	21.25	6
6.50	273	21.50	6
6.75	201	21.75	5
7.00	166	22.00	5
7.25	150	22.25	5
7.50	133	22.50	5
7.75	94	22.75	5
8.00	48	23.00	5
8.25	33	23.25	5
8.50	26	23.50	5
8.75	25	23.75	5
9.00	24	24.00	5
9.25	23	24.25	4
9.50	22	24.50	4
9.75	21	24.75	4
10.00	21	25.00	4
10.25	20	25.25	4
10.50	19	25.50	4
10.75	19	25.75	4
11.00	18	26.00	4
11.25	17	26.25	4
11.50	17	26.50	4
11.75	16	26.75	4
12.00	16	27.00	4
12.25	15	27.25	4
12.50	15	27.50	3
12.75	14	27.75	3
13.00	14	28.00	3
13.25	13	28.25	3
13.50	13	28.50	3
13.75	12	28.75	3
14.00	12	29.00	3
14.25	12	29.25	3
14.50	11	29.50	3
14.75	11	29.75	3

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 209

t	q	t	q
0.00	0	6.00	18
0.10	0	6.10	18
0.20	0	6.20	17
0.30	0	6.30	17
0.40	0	6.40	17
0.50	0	6.50	17
0.60	0	6.60	16
0.70	0	6.70	16
0.80	0	6.80	16
0.90	0	6.90	16
1.00	0	7.00	16
1.10	67	7.10	15
1.20	229	7.20	15
1.30	448	7.30	15
1.40	602	7.40	15
1.50	580	7.50	15
1.60	2193	7.60	14
1.70	2486	7.70	14
1.80	2440	7.80	14
1.90	2317	7.90	14
2.00	1953	8.00	14
2.10	1401	8.10	14
2.20	900	8.20	13
2.30	575	8.30	13
2.40	383	8.40	13
2.50	254	8.50	13
2.60	170	8.60	13
2.70	116	8.70	13
2.80	79	8.80	13
2.90	55	8.90	12
3.00	47	9.00	12
3.10	42	9.10	12
3.20	37	9.20	12
3.30	34	9.30	12
3.40	31	9.40	12
3.50	30	9.50	12
3.60	28	9.60	11
3.70	27	9.70	11
3.80	26	9.80	11
3.90	24	9.90	11
4.00	24	10.00	11
4.10	23	10.10	11
4.20	23	10.20	11
4.30	23	10.30	11
4.40	22	10.40	10
4.50	22	10.50	10
4.60	22	10.60	10
4.70	21	10.70	10
4.80	21	10.80	10
4.90	21	10.90	10
5.00	21	11.00	10
5.10	20	11.10	10
5.20	20	11.20	10
5.30	20	11.30	9
5.40	19	11.40	9
5.50	19	11.50	9
5.60	19	11.60	9
5.70	19	11.70	9
5.80	18	11.80	9
5.90	18	11.90	9

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 209

NO PROJECT

t	q
0.00	0
0.10	0
0.20	0
0.30	0
0.40	0
0.50	0
0.60	0
0.70	0
0.80	0
0.90	0
1.00	67
1.10	322
1.20	625
1.30	889
1.40	1294
1.50	1623
1.60	1972
1.70	2221
1.80	2154
1.90	1790
2.00	1287
2.10	832
2.20	564
2.30	392
2.40	265
2.50	182
2.60	125
2.70	85
2.80	60
2.90	41
3.00	28
3.10	18
3.20	12
3.30	8
3.40	5
3.50	2
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 209

t	q	t	q
0.00	0	15.00	11
0.25	0	15.25	11
0.50	0	15.50	10
0.75	0	15.75	10
1.00	0	16.00	10
1.25	2	16.25	10
1.50	7	16.50	9
1.75	14	16.75	9
2.00	26	17.00	9
2.25	35	17.25	9
2.50	44	17.50	8
2.75	48	17.75	8
3.00	51	18.00	8
3.25	54	18.25	8
3.50	59	18.50	8
3.75	63	18.75	7
4.00	68	19.00	7
4.25	72	19.25	7
4.50	79	19.50	7
4.75	101	19.75	7
5.00	238	20.00	7
5.25	596	20.25	6
5.50	1149	20.50	6
5.75	1492	20.75	6
6.00	1318	21.00	6
6.25	808	21.25	6
6.50	410	21.50	6
6.75	273	21.75	6
7.00	201	22.00	5
7.25	166	22.25	5
7.50	150	22.50	5
7.75	133	22.75	5
8.00	94	23.00	5
8.25	48	23.25	5
8.50	33	23.50	5
8.75	26	23.75	5
9.00	25	24.00	5
9.25	24	24.25	5
9.50	23	24.50	4
9.75	22	24.75	4
10.00	21	25.00	4
10.25	21	25.25	4
10.50	20	25.50	4
10.75	19	25.75	4
11.00	19	26.00	4
11.25	18	26.25	4
11.50	17	26.50	4
11.75	17	26.75	4
12.00	16	27.00	4
12.25	16	27.25	4
12.50	15	27.50	4
12.75	15	27.75	3
13.00	14	28.00	3
13.25	14	28.25	3
13.50	13	28.50	3
13.75	13	28.75	3
14.00	12	29.00	3
14.25	12	29.25	3
14.50	12	29.50	3
14.75	11	29.75	3

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-5

Frequency in years 100
Drainage area in sq. mi. 0.166
Length in ft. 3000
Elevation, ft. msl:
    Top of Basin 1445
    Bottom of Basin 1423
Basin Slope in % 0.7
Basin Width in ft. 1800
Time of Concentraion in hrs. 0.49
Precipitation:
    Duration in hrs. 0.49
    Point Precipitation in inches 2.09
    Rainfall intensity in./hr. 4.29
Pervious Area in sq. mi. 0.083
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.083
Curve Number 97
Runoff (Q) in inches 1.74
Time of Peak in hrs. 0.32
Peak Discharge in cfs 432
Runoff Volume in af. 15

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-6

Frequency in years 100
Drainage area in sq. mi. 0.194
Length in ft. 5400
Elevation, ft. msl:
    Top of Basin 1423
    Bottom of Basin 1386
Basin Slope in % 0.7
Basin Width in ft. 1025
Time of Concentraion in hrs. 0.91
Precipitation:
    Duration in hrs. 0.91
    Point Precipitation in inches 2.54
    Rainfall intensity in./hr. 2.80
Pervious Area in sq. mi. 0.097
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.097
Curve Number 95
Runoff (Q) in inches 2.03
Time of Peak in hrs. 0.60
Peak Discharge in cfs 315
Runoff Volume in af. 21

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-13

Frequency in years 100
Drainage area in sq. mi. 0.138
Length in ft. 3400
Elevation, ft. msl:
Top of Basin 1386
Bottom of Basin 1365
Basin Slope in % 0.6
Basin Width in ft. 1150
Time of Concentraion in hrs. 0.60
Precipitation:
Duration in hrs. 0.60
Point Precipitation in inches 2.27
Rainfall intensity in./hr. 3.78
Pervious Area in sq. mi. 0.069
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.069
Curve Number 96
Runoff (Q) in inches 1.88
Time of Peak in hrs. 0.40
Peak Discharge in cfs 313
Runoff Volume in af. 14

GARY ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 106
TOTAL OUTFLOW AT CP 107

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	45	23	2	0	0.17	2
0.20	147	96	3	0	0.93	3
0.30	298	223	6	0	2.72	6
0.40	386	342	11	0	5.45	11
0.50	428	407	19	0	8.66	19
0.60	454	441	28	0	12.08	28
0.70	521	488	39	0	15.79	39
0.80	705	613	54	0	20.41	54
0.90	789	747	74	0	25.97	74
1.00	689	739	95	0	31.29	95
1.10	502	595	113	0	35.28	113
1.20	322	412	123	0	37.66	123
1.30	220	271	129	0	38.83	129
1.40	151	185	131	0	39.28	131
1.50	107	129	131	0	39.27	131
1.60	76	91	129	0	38.95	129
1.70	54	65	127	0	38.44	127
1.80	39	47	124	0	37.81	124
1.90	28	34	121	0	37.09	121
2.00	20	24	117	0	36.32	117
2.10	15	17	114	0	35.52	114
2.20	10	13	110	0	34.72	110
2.30	8	9	107	0	33.91	107
2.40	6	7	103	0	33.11	103
2.50	5	5	100	0	32.33	100
2.60	3	4	97	0	31.57	97
2.70	3	3	93	0	30.82	93
2.80	2	3	90	0	30.09	90
2.90	2	2	88	0	29.38	88
3.00	1	1	85	0	28.69	85
3.10	1	1	82	0	28.02	82
3.20	0	0	80	0	27.37	80
3.30	0	0	77	0	26.73	77
3.40	0	0	75	0	26.11	75
3.50	0	0	72	0	25.52	72
3.60	0	0	70	0	24.94	70
3.70	0	0	68	0	24.38	68
3.80	0	0	66	0	23.83	66
3.90	0	0	64	0	23.30	64
4.00	0	0	62	0	22.79	62
4.10	0	0	60	0	22.29	60
4.20	0	0	59	0	21.80	59
4.30	0	0	57	0	21.33	57
4.40	0	0	55	0	20.88	55
4.50	0	0	54	0	20.43	54
4.60	0	0	52	0	20.00	52
4.70	0	0	51	0	19.58	51
4.80	0	0	49	0	19.17	49
4.90	0	0	48	0	18.77	48
5.00	0	0	47	0	18.38	47
5.10	0	0	46	0	18.01	46
5.20	0	0	44	0	17.64	44
5.30	0	0	43	0	17.28	43
5.40	0	0	42	0	16.93	42
5.50	0	0	41	0	16.59	41
5.60	0	0	40	0	16.26	40
5.70	0	0	39	0	15.94	39
5.80	0	0	38	0	15.63	38
5.90	0	0	37	0	15.32	37

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

GARY ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 106

TOTAL OUTFLOW AT CP 107

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	36	0	15.02	36
6.10	0	0	35	0	14.73	35
6.20	0	0	34	0	14.44	34
6.30	0	0	34	0	14.17	34
6.40	0	0	33	0	13.89	33
6.50	0	0	32	0	13.63	32
6.60	0	0	31	0	13.37	31
6.70	0	0	31	0	13.12	31
6.80	0	0	30	0	12.87	30
6.90	0	0	29	0	12.63	29
7.00	0	0	29	0	12.39	29
7.10	0	0	28	0	12.16	28
7.20	0	0	27	0	11.94	27
7.30	0	0	27	0	11.72	27
7.40	0	0	26	0	11.50	26
7.50	0	0	25	0	11.29	25
7.60	0	0	25	0	11.08	25
7.70	0	0	24	0	10.88	24
7.80	0	0	24	0	10.69	24
7.90	0	0	23	0	10.49	23
8.00	0	0	23	0	10.30	23
8.10	0	0	22	0	10.12	22
8.20	0	0	22	0	9.94	22
8.30	0	0	21	0	9.76	21
8.40	0	0	21	0	9.59	21
8.50	0	0	21	0	9.42	21
8.60	0	0	20	0	9.25	20
8.70	0	0	20	0	9.09	20
8.80	0	0	19	0	8.93	19
8.90	0	0	19	0	8.77	19
9.00	0	0	19	0	8.61	19
9.10	0	0	18	0	8.46	18
9.20	0	0	18	0	8.32	18
9.30	0	0	18	0	8.17	18
9.40	0	0	17	0	8.03	17
9.50	0	0	17	0	7.89	17
9.60	0	0	17	0	7.75	17
9.70	0	0	16	0	7.62	16
9.80	0	0	16	0	7.49	16
9.90	0	0	16	0	7.36	16
10.00	0	0	15	0	7.23	15
10.10	0	0	15	0	7.11	15
10.20	0	0	15	0	6.98	15
10.30	0	0	15	0	6.86	15
10.40	0	0	14	0	6.75	14
10.50	0	0	14	0	6.63	14
10.60	0	0	14	0	6.52	14
10.70	0	0	13	0	6.41	13
10.80	0	0	13	0	6.30	13
10.90	0	0	13	0	6.19	13
11.00	0	0	13	0	6.08	13
11.10	0	0	13	0	5.98	13
11.20	0	0	12	0	5.88	12
11.30	0	0	12	0	5.78	12
11.40	0	0	12	0	5.68	12
11.50	0	0	12	0	5.58	12
11.60	0	0	12	0	5.49	12
11.70	0	0	11	0	5.39	11
11.80	0	0	11	0	5.30	11
11.90	0	0	11	0	5.21	11

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 106

NO PROJECT

t	q
0.00	0
0.10	45
0.20	147
0.30	298
0.40	386
0.50	517
0.60	982
0.70	1612
0.80	2290
0.90	2911
1.00	2955
1.10	2133
1.20	1311
1.30	813
1.40	521
1.50	344
1.60	228
1.70	155
1.80	105
1.90	71
2.00	47
2.10	33
2.20	22
2.30	16
2.40	12
2.50	8
2.60	5
2.70	3
2.80	2
2.90	2
3.00	1
3.10	1
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

GARY ROAD DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 106

TOTAL OUTFLOW AT CP 107

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.25	0	0	0	0	0.00	0
0.50	3	2	2	0	0.00	2
0.75	10	6	2	0	0.08	2
1.00	21	15	3	0	0.34	3
1.25	29	25	3	0	0.79	3
1.50	35	32	4	0	1.36	4
1.75	37	36	5	0	2.00	5
2.00	40	38	6	0	2.66	6
2.25	42	41	8	0	3.34	8
2.50	44	43	9	0	4.04	9
2.75	45	45	10	0	4.75	10
3.00	47	46	12	0	5.46	12
3.25	48	47	13	0	6.16	13
3.50	49	48	15	0	6.85	15
3.75	54	51	17	0	7.57	17
4.00	83	68	19	0	8.58	19
4.25	135	109	24	0	10.34	24
4.50	283	209	34	0	13.96	34
4.75	397	340	54	0	19.86	54
5.00	411	404	80	0	26.55	80
5.25	261	336	101	0	31.40	101
5.50	115	188	109	0	33.04	109
5.75	81	98	108	0	32.83	108
6.00	58	69	104	0	32.11	104
6.25	46	52	100	0	31.12	100
6.50	42	44	95	0	30.06	95
6.75	38	40	91	0	29.02	91
7.00	29	34	86	0	27.94	86
7.25	16	23	81	0	26.74	81
7.50	4	10	75	0	25.39	75
7.75	0	2	70	0	23.99	70
8.00	0	0	65	0	22.66	65
8.25	0	0	60	0	21.42	60
8.50	0	0	56	0	20.27	56
8.75	0	0	52	0	19.20	52
9.00	0	0	48	0	18.20	48
9.25	0	0	45	0	17.27	45
9.50	0	0	42	0	16.40	42
9.75	0	0	39	0	15.59	39
10.00	0	0	37	0	14.82	37
10.25	0	0	35	0	14.10	35
10.50	0	0	33	0	13.43	33
10.75	0	0	31	0	12.79	31
11.00	0	0	29	0	12.20	29
11.25	0	0	27	0	11.63	27
11.50	0	0	26	0	11.10	26
11.75	0	0	24	0	10.59	24
12.00	0	0	23	0	10.11	23
12.25	0	0	22	0	9.66	22
12.50	0	0	21	0	9.23	21
12.75	0	0	20	0	8.82	20
13.00	0	0	19	0	8.44	19
13.25	0	0	18	0	8.07	18
13.50	0	0	17	0	7.72	17
13.75	0	0	16	0	7.38	16
14.00	0	0	15	0	7.07	15
14.25	0	0	15	0	6.76	15
14.50	0	0	14	0	6.47	14
14.75	0	0	13	0	6.20	13

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-4

Frequency in years 100
Drainage area in sq. mi. 0.084
Length in ft. 2600
Elevation, ft. msl:
Top of Basin 1448
Bottom of Basin 1423
Basin Slope in % 1.0
Basin Width in ft. 1000
Time of Concentraion in hrs. 0.37
Precipitation:
Duration in hrs. 0.37
Point Precipitation in inches 1.84
Rainfall intensity in./hr. 5.00
Pervious Area in sq. mi. 0.042
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.042
Curve Number 97
Runoff (Q) in inches 1.56
Time of Peak in hrs. 0.25
Peak Discharge in cfs 258
Runoff Volume in af. 7

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-7

Frequency in years 100
Drainage area in sq. mi. 0.306
Length in ft. 5600
Elevation, ft. msl:
Top of Basin 1423
Bottom of Basin 1386
Basin Slope in % 0.7
Basin Width in ft. 1650
Time of Concentraion in hrs. 0.96
Precipitation:
Duration in hrs. 0.96
Point Precipitation in inches 2.59
Rainfall intensity in./hr. 2.71
Pervious Area in sq. mi. 0.153
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.153
Curve Number 95
Runoff (Q) in inches 2.06
Time of Peak in hrs. 0.64
Peak Discharge in cfs 477
Runoff Volume in af. 34

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-11

Frequency in years 100
Drainage area in sq. mi. 0.090
Length in ft. 3400
Elevation, ft. msl:
Top of Basin 1381
Bottom of Basin 1365
Basin Slope in % 0.5
Basin Width in ft. 800
Time of Concentraion in hrs. 0.69
Precipitation:
Duration in hrs. 0.69
Point Precipitation in inches 2.37
Rainfall intensity in./hr. 3.45
Pervious Area in sq. mi. 0.045
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.045
Curve Number 96
Runoff (Q) in inches 1.94
Time of Peak in hrs. 0.46
Peak Discharge in cfs 184
Runoff Volume in af. 9

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-12

Frequency in years 100
Drainage area in sq. mi. 0.205
Length in ft. 3500
Elevation, ft. msl:
Top of Basin 1386
Bottom of Basin 1365
Basin Slope in % 0.6
Basin Width in ft. 1700
Time of Concentraion in hrs. 0.63
Precipitation:
Duration in hrs. 0.63
Point Precipitation in inches 2.34
Rainfall intensity in./hr. 3.73
Pervious Area in sq. mi. 0.103
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.102
Curve Number 96
Runoff (Q) in inches 1.93
Time of Peak in hrs. 0.42
Peak Discharge in cfs 458
Runoff Volume in af. 21

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 108

t	q	t	q	t	q
0.00	0	6.00	176	12.00	50
0.10	64	6.10	173	12.10	49
0.20	223	6.20	170	12.20	48
0.30	495	6.30	166	12.30	48
0.40	710	6.40	163	12.40	47
0.50	841	6.50	160	12.50	46
0.60	914	6.60	157	12.60	45
0.70	974	6.70	154	12.70	45
0.80	1090	6.80	151	12.80	44
0.90	1039	6.90	148	12.90	43
1.00	882	7.00	146	13.00	42
1.10	764	7.10	143	13.10	42
1.20	680	7.20	140	13.20	41
1.30	618	7.30	138	13.30	40
1.40	577	7.40	135	13.40	40
1.50	813	7.50	132	13.50	39
1.60	778	7.60	130	13.60	39
1.70	606	7.70	128	13.70	38
1.80	532	7.80	125	13.80	37
1.90	476	7.90	123	13.90	37
2.00	427	8.00	121	14.00	36
2.10	387	8.10	119	14.10	36
2.20	377	8.20	117	14.20	35
2.30	368	8.30	114	14.30	35
2.40	360	8.40	112	14.40	34
2.50	354	8.50	110	14.50	34
2.60	348	8.60	108	14.60	33
2.70	340	8.70	107	14.70	33
2.80	333	8.80	105	14.80	32
2.90	327	8.90	103	14.90	32
3.00	320	9.00	101	15.00	31
3.10	313	9.10	99	15.10	31
3.20	307	9.20	98	15.20	30
3.30	300	9.30	96	15.30	30
3.40	294	9.40	94	15.40	29
3.50	288	9.50	93	15.50	29
3.60	283	9.60	91	15.60	29
3.70	277	9.70	90	15.70	28
3.80	272	9.80	88	15.80	28
3.90	267	9.90	87	15.90	27
4.00	262	10.00	85	16.00	27
4.10	257	10.10	84	16.10	27
4.20	252	10.20	82	16.20	26
4.30	247	10.30	81	16.30	26
4.40	242	10.40	80	16.40	26
4.50	237	10.50	78	16.50	25
4.60	232	10.60	77	16.60	25
4.70	228	10.70	76	16.70	24
4.80	223	10.80	75	16.80	24
4.90	219	10.90	73	16.90	24
5.00	215	11.00	72	17.00	24
5.10	210	11.10	71	17.10	23
5.20	206	11.20	70	17.20	23
5.30	202	11.30	69	17.30	23
5.40	198	11.40	67	17.40	22
5.50	194	11.50	66	17.50	22
5.60	191	11.60	65	17.60	22
5.70	187	11.70	64	17.70	21
5.80	183	11.80	63	17.80	21
5.90	180	11.90	62	17.90	21

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 108

NO PROJECT

t	q
0.00	0
0.10	83
0.20	265
0.30	641
0.40	1131
0.50	1661
0.60	2062
0.70	2294
0.80	2495
0.90	2879
1.00	2719
1.10	2096
1.20	1338
1.30	877
1.40	592
1.50	403
1.60	281
1.70	196
1.80	137
1.90	99
2.00	70
2.10	49
2.20	35
2.30	26
2.40	19
2.50	14
2.60	9
2.70	6
2.80	5
2.90	4
3.00	3
3.10	2
3.20	1
3.30	1
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 108

t	q	t	q
0.00	0	15.00	66
0.25	0	15.25	63
0.50	10	15.50	60
0.75	17	15.75	58
1.00	28	16.00	55
1.25	38	16.25	53
1.50	46	16.50	50
1.75	50	16.75	48
2.00	55	17.00	46
2.25	60	17.25	44
2.50	66	17.50	43
2.75	72	17.75	41
3.00	76	18.00	39
3.25	82	18.25	38
3.50	88	18.50	36
3.75	98	18.75	35
4.00	134	19.00	34
4.25	196	19.25	32
4.50	364	19.50	31
4.75	512	19.75	30
5.00	576	20.00	29
5.25	483	20.25	28
5.50	385	20.50	27
5.75	383	20.75	26
6.00	382	21.00	25
6.25	373	21.25	24
6.50	365	21.50	23
6.75	357	21.75	23
7.00	342	22.00	22
7.25	322	22.25	21
7.50	301	22.50	21
7.75	287	22.75	20
8.00	277	23.00	19
8.25	266	23.25	19
8.50	255	23.50	18
8.75	244	23.75	17
9.00	233	24.00	17
9.25	223	24.25	16
9.50	212	24.50	16
9.75	202	24.75	15
10.00	194	25.00	15
10.25	185	25.25	15
10.50	176	25.50	14
10.75	168	25.75	14
11.00	160	26.00	13
11.25	153	26.25	13
11.50	146	26.50	13
11.75	139	26.75	12
12.00	133	27.00	12
12.25	127	27.25	12
12.50	122	27.50	11
12.75	116	27.75	11
13.00	111	28.00	11
13.25	106	28.25	10
13.50	102	28.50	10
13.75	97	28.75	10
14.00	93	29.00	10
14.25	90	29.25	9
14.50	86	29.50	9
14.75	82	29.75	9

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-1

Frequency in years 100
Drainage area in sq. mi. 0.402
Length in ft. 3800
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1475
Basin Slope in % 0.9
Basin Width in ft. 3000
Time of Concentraion in hrs. 0.44
Precipitation:
Duration in hrs. 0.44
Point Precipitation in inches 1.99
Rainfall intensity in./hr. 4.52
Pervious Area in sq. mi. 0.201
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.201
Curve Number 97
Runoff (Q) in inches 1.67
Time of Peak in hrs. 0.29
Peak Discharge in cfs 1109
Runoff Volume in af. 36

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-3

Frequency in years 100
Drainage area in sq. mi. 0.506
Length in ft. 6000
Elevation, ft. msl:
Top of Basin 1475
Bottom of Basin 1430
Basin Slope in % 0.8
Basin Width in ft. 2500
Time of Concentraion in hrs. 0.68
Precipitation:
Duration in hrs. 0.68
Point Precipitation in inches 2.33
Rainfall intensity in./hr. 3.44
Pervious Area in sq. mi. 0.253
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.253
Curve Number 96
Runoff (Q) in inches 1.90
Time of Peak in hrs. 0.45
Peak Discharge in cfs 1034
Runoff Volume in af. 51

SCOTTSDALE AIRPORT DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 101

TOTAL OUTFLOW AT CP 102

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	124	62	8	0	0.45	8
0.20	395	259	15	0	2.47	15
0.30	793	594	35	0	7.08	35
0.40	1017	905	73	0	13.96	73
0.50	1288	1152	130	0	22.40	130
0.60	1753	1520	217	0	33.17	217
0.70	1739	1746	241	921	38.00	1162
0.80	1303	1521	241	1280	38.00	1521
0.90	781	1042	241	800	38.00	1042
1.00	490	635	241	394	38.00	635
1.10	303	396	241	155	38.00	396
1.20	193	248	241	6	38.00	248
1.30	122	157	241	0	37.30	241
1.40	78	100	241	0	36.14	241
1.50	51	64	230	0	34.76	230
1.60	34	42	218	0	33.31	218
1.70	22	28	205	0	31.85	205
1.80	13	18	193	0	30.40	193
1.90	9	11	182	0	28.99	182
2.00	6	7	171	0	27.64	171
2.10	3	5	160	0	26.35	160
2.20	1	2	151	0	25.12	151
2.30	0	1	142	0	23.95	142
2.40	0	0	134	0	22.85	134
2.50	0	0	126	0	21.81	126
2.60	0	0	119	0	20.82	119
2.70	0	0	112	0	19.89	112
2.80	0	0	106	0	19.02	106
2.90	0	0	101	0	18.18	101
3.00	0	0	95	0	17.40	95
3.10	0	0	90	0	16.65	90
3.20	0	0	86	0	15.94	86
3.30	0	0	81	0	15.27	81
3.40	0	0	77	0	14.63	77
3.50	0	0	74	0	14.02	74
3.60	0	0	70	0	13.44	70
3.70	0	0	67	0	12.89	67
3.80	0	0	64	0	12.36	64
3.90	0	0	61	0	11.86	61
4.00	0	0	58	0	11.38	58
4.10	0	0	55	0	10.92	55
4.20	0	0	53	0	10.48	53
4.30	0	0	51	0	10.07	51
4.40	0	0	48	0	9.67	48
4.50	0	0	46	0	9.28	46
4.60	0	0	44	0	8.91	44
4.70	0	0	43	0	8.56	43
4.80	0	0	41	0	8.23	41
4.90	0	0	39	0	7.90	39
5.00	0	0	38	0	7.59	38
5.10	0	0	36	0	7.29	36
5.20	0	0	35	0	7.00	35
5.30	0	0	33	0	6.73	33
5.40	0	0	32	0	6.46	32
5.50	0	0	31	0	6.21	31
5.60	0	0	30	0	5.96	30
5.70	0	0	29	0	5.73	29
5.80	0	0	28	0	5.50	28
5.90	0	0	27	0	5.28	27

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

SCOTTSDALE AIRPORT DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 101

TOTAL OUTFLOW AT CP 102

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	26	0	5.06	26
6.10	0	0	25	0	4.86	25
6.20	0	0	24	0	4.66	24
6.30	0	0	23	0	4.47	23
6.40	0	0	22	0	4.29	22
6.50	0	0	22	0	4.11	22
6.60	0	0	21	0	3.94	21
6.70	0	0	20	0	3.77	20
6.80	0	0	19	0	3.61	19
6.90	0	0	19	0	3.46	19
7.00	0	0	18	0	3.31	18
7.10	0	0	18	0	3.16	18
7.20	0	0	17	0	3.02	17
7.30	0	0	17	0	2.88	17
7.40	0	0	16	0	2.75	16
7.50	0	0	16	0	2.62	16
7.60	0	0	15	0	2.50	15
7.70	0	0	15	0	2.38	15
7.80	0	0	14	0	2.26	14
7.90	0	0	14	0	2.15	14
8.00	0	0	13	0	2.04	13
8.10	0	0	13	0	1.93	13
8.20	0	0	13	0	1.82	13
8.30	0	0	12	0	1.72	12
8.40	0	0	12	0	1.63	12
8.50	0	0	12	0	1.53	12
8.60	0	0	11	0	1.44	11
8.70	0	0	11	0	1.35	11
8.80	0	0	11	0	1.26	11
8.90	0	0	10	0	1.18	10
9.00	0	0	10	0	1.09	10
9.10	0	0	10	0	1.01	10
9.20	0	0	9	0	0.93	9
9.30	0	0	9	0	0.86	9
9.40	0	0	9	0	0.78	9
9.50	0	0	9	0	0.71	9
9.60	0	0	9	0	0.64	9
9.70	0	0	8	0	0.57	8
9.80	0	0	8	0	0.50	8
9.90	0	0	8	0	0.44	8
10.00	0	0	8	0	0.37	8
10.10	0	0	8	0	0.31	8
10.20	0	0	7	0	0.25	7
10.30	0	0	7	0	0.19	7
10.40	0	0	7	0	0.13	7
10.50	0	0	7	0	0.08	7
10.60	0	0	7	0	0.02	7
10.70	0	0	6	0	0.00	6

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 102

NO PROJECT

t	q
0.00	0
0.10	124
0.20	395
0.30	793
0.40	1017
0.50	1288
0.60	1753
0.70	1739
0.80	1303
0.90	781
1.00	490
1.10	303
1.20	193
1.30	122
1.40	78
1.50	51
1.60	34
1.70	22
1.80	13
1.90	9
2.00	6
2.10	3
2.20	1
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

SCOTTSDALE AIRPORT DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 101

TOTAL OUTFLOW AT CP 102

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.25	0	0	0	0	0.00	0
0.50	11	6	7	0	0.00	7
0.75	22	17	7	0	0.19	7
1.00	42	32	9	0	0.67	9
1.25	53	48	12	0	1.42	12
1.50	64	59	15	0	2.32	15
1.75	69	67	19	0	3.30	19
2.00	73	71	23	0	4.28	23
2.25	77	75	28	0	5.25	28
2.50	81	79	33	0	6.20	33
2.75	83	82	38	0	7.11	38
3.00	86	84	42	0	7.98	42
3.25	87	86	47	0	8.80	47
3.50	90	89	51	0	9.57	51
3.75	105	97	56	0	10.41	56
4.00	194	149	67	0	12.11	67
4.25	271	233	87	0	15.11	87
4.50	682	477	141	0	22.05	141
4.75	646	664	223	0	31.15	223
5.00	598	622	241	49	38.00	291
5.25	484	541	241	299	38.00	541
5.50	209	346	241	105	38.00	346
5.75	137	173	241	0	36.59	241
6.00	115	126	241	0	34.21	241
6.25	83	99	227	0	31.57	227
6.50	75	79	203	0	29.02	203
6.75	68	71	182	0	26.74	182
7.00	42	55	162	0	24.53	162
7.25	27	34	143	0	22.29	143
7.50	9	18	125	0	20.08	125
7.75	0	4	108	0	17.93	108
8.00	0	0	94	0	16.00	94
8.25	0	0	82	0	14.31	82
8.50	0	0	72	0	12.82	72
8.75	0	0	63	0	11.52	63
9.00	0	0	56	0	10.36	56
9.25	0	0	50	0	9.32	50
9.50	0	0	45	0	8.40	45
9.75	0	0	40	0	7.57	40
10.00	0	0	36	0	6.83	36
10.25	0	0	33	0	6.16	33
10.50	0	0	30	0	5.55	30
10.75	0	0	27	0	4.99	27
11.00	0	0	24	0	4.49	24
11.25	0	0	22	0	4.02	22
11.50	0	0	20	0	3.60	20
11.75	0	0	19	0	3.21	19
12.00	0	0	17	0	2.86	17
12.25	0	0	16	0	2.53	16
12.50	0	0	15	0	2.22	15
12.75	0	0	14	0	1.94	14
13.00	0	0	13	0	1.68	13
13.25	0	0	12	0	1.44	12
13.50	0	0	11	0	1.22	11
13.75	0	0	10	0	1.01	10
14.00	0	0	9	0	0.81	9
14.25	0	0	9	0	0.63	9
14.50	0	0	8	0	0.46	8
14.75	0	0	8	0	0.29	8

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-2

Frequency in years 100
Drainage area in sq. mi. 0.402
Length in ft. 6400
Elevation, ft. msl:
Top of Basin 1515
Bottom of Basin 1455
Basin Slope in % 0.9
Basin Width in ft. 1900
Time of Concentraion in hrs. 0.65
Precipitation:
Duration in hrs. 0.65
Point Precipitation in inches 2.36
Rainfall intensity in./hr. 3.62
Pervious Area in sq. mi. 0.201
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.201
Curve Number 96
Runoff (Q) in inches 1.94
Time of Peak in hrs. 0.44
Peak Discharge in cfs 868
Runoff Volume in af. 42

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 103

t	q	t	q
0.00	0	6.00	26
0.10	8	6.10	25
0.20	15	6.20	24
0.30	143	6.30	23
0.40	418	6.40	22
0.50	817	6.50	22
0.60	1077	6.60	21
0.70	2002	6.70	20
0.80	2223	6.80	19
0.90	1537	6.90	19
1.00	964	7.00	18
1.10	625	7.10	18
1.20	408	7.20	17
1.30	352	7.30	17
1.40	318	7.40	16
1.50	283	7.50	16
1.60	254	7.60	15
1.70	230	7.70	15
1.80	210	7.80	14
1.90	193	7.90	14
2.00	179	8.00	13
2.10	167	8.10	13
2.20	155	8.20	13
2.30	144	8.30	12
2.40	134	8.40	12
2.50	126	8.50	12
2.60	119	8.60	11
2.70	112	8.70	11
2.80	106	8.80	11
2.90	101	8.90	10
3.00	95	9.00	10
3.10	90	9.10	10
3.20	86	9.20	9
3.30	81	9.30	9
3.40	77	9.40	9
3.50	74	9.50	9
3.60	70	9.60	9
3.70	67	9.70	8
3.80	64	9.80	8
3.90	61	9.90	8
4.00	58	10.00	8
4.10	55	10.10	8
4.20	53	10.20	7
4.30	51	10.30	7
4.40	48	10.40	7
4.50	46	10.50	7
4.60	44	10.60	7
4.70	43	10.70	6
4.80	41	10.80	0
4.90	39	10.90	0
5.00	38	11.00	0
5.10	36	11.10	0
5.20	35	11.20	0
5.30	33	11.30	0
5.40	32	11.40	0
5.50	31	11.50	0
5.60	30	11.60	0
5.70	29	11.70	0
5.80	28	11.80	0
5.90	27	11.90	0

t = time in hours

q - discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 103

t	q
0.00	0
0.25	0
0.50	7
0.75	16
1.00	27
1.25	38
1.50	43
1.75	49
2.00	56
2.25	62
2.50	68
2.75	75
3.00	80
3.25	85
3.50	91
3.75	97
4.00	119
4.25	209
4.50	315
4.75	668
5.00	665
5.25	662
5.50	433
5.75	241
6.00	241
6.25	227
6.50	203
6.75	182
7.00	162
7.25	143
7.50	125
7.75	108
8.00	94
8.25	82
8.50	72
8.75	63
9.00	56
9.25	50
9.50	45
9.75	40
10.00	36
10.25	33
10.50	30
10.75	27
11.00	24
11.25	22
11.50	20
11.75	19
12.00	17
12.25	16
12.50	15
12.75	14
13.00	13
13.25	12
13.50	11
13.75	10
14.00	9
14.25	9
14.50	8
14.75	8

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-8

Frequency in years 100
Drainage area in sq. mi. 0.106
Length in ft. 5000
Elevation, ft. msl:
Top of Basin 1430
Bottom of Basin 1400
Basin Slope in % 0.6
Basin Width in ft. 1200
Time of Concentraion in hrs. 0.64
Precipitation:
Duration in hrs. 0.64
Point Precipitation in inches 2.29
Rainfall intensity in./hr. 3.58
Pervious Area in sq. mi. 0.053
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.053
Curve Number 96
Runoff (Q) in inches 1.88
Time of Peak in hrs. 0.43
Peak Discharge in cfs 226
Runoff Volume in af. 11

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-9

Frequency in years 100
Drainage area in sq. mi. 0.191
Length in ft. 4100
Elevation, ft. msl:
Top of Basin 1450
Bottom of basin 1408
Basin Slope in % 1.0
Basin Width in ft. 1300
Time of Concentraion in hrs. 0.45
Precipitation:
Duration in hrs. 0.45
Point Precipitation in inches 1.99
Rainfall intensity in./hr. 4.44
Pervious Area in sq. mi. 0.096
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.095
Curve Number 97
Runoff (Q) in inches 1.67
Time of Peak in hrs. 0.30
Peak Discharge in cfs 517
Runoff Volume in af. 17

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-10

Frequency in years 100
Drainage area in sq. mi. 0.091
Length in ft. 2750
Elevation, ft. msl:
Top of Basin 1408
Bottom of Basin 1385
Basin Slope in % 0.8
Basin Width in ft. 1100
Time of Concentraion in hrs. 0.36
Precipitation:
Duration in hrs. 0.36
Point Precipitation in inches 1.68
Rainfall intensity in./hr. 4.72
Pervious Area in sq. mi. 0.046
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.045
Curve Number 98
Runoff (Q) in inches 1.42
Time of Peak in hrs. 0.24
Peak Discharge in cfs 263
Runoff Volume in af. 7

CACTUS ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	118	59	5	0	0.44	5
0.20	463	290	8	0	2.78	8
0.30	824	643	15	0	7.97	15
0.40	886	855	26	0	14.83	26
0.50	855	871	38	0	21.71	38
0.60	884	869	51	0	28.47	51
0.70	1099	991	68	0	36.10	68
0.80	1252	1175	89	0	45.07	89
0.90	2112	1682	123	0	57.96	123
1.00	2292	2202	170	0	74.75	170
1.10	1581	1937	215	0	88.99	215
1.20	992	1287	243	0	97.62	243
1.30	643	817	244	285	100.00	529
1.40	420	531	244	288	100.00	531
1.50	359	390	244	146	100.00	390
1.60	322	340	244	96	100.00	340
1.70	285	303	244	60	100.00	303
1.80	256	270	244	27	100.00	270
1.90	231	244	244	0	100.00	244
2.00	211	221	244	0	99.81	244
2.10	194	202	244	0	99.47	244
2.20	179	186	244	0	98.99	244
2.30	167	173	244	0	98.41	244
2.40	155	161	243	0	97.73	243
2.50	144	149	241	0	96.97	241
2.60	134	139	238	0	96.16	238
2.70	126	130	235	0	95.29	235
2.80	119	123	232	0	94.38	232
2.90	112	116	229	0	93.45	229
3.00	106	109	226	0	92.48	226
3.10	101	103	223	0	91.50	223
3.20	95	98	219	0	90.50	219
3.30	90	93	216	0	89.48	216
3.40	86	88	213	0	88.45	213
3.50	81	84	209	0	87.41	209
3.60	77	79	206	0	86.36	206
3.70	74	76	203	0	85.31	203
3.80	70	72	200	0	84.25	200
3.90	67	68	196	0	83.20	196
4.00	64	65	193	0	82.14	193
4.10	61	62	190	0	81.09	190
4.20	58	59	186	0	80.04	186
4.30	55	57	183	0	78.99	183
4.40	53	54	180	0	77.95	180
4.50	51	52	177	0	76.92	177
4.60	48	50	174	0	75.89	174
4.70	46	47	171	0	74.87	171
4.80	44	45	168	0	73.86	168
4.90	43	44	165	0	72.85	165
5.00	41	42	162	0	71.86	162
5.10	39	40	159	0	70.88	159
5.20	38	38	156	0	69.90	156
5.30	36	37	153	0	68.94	153
5.40	35	35	151	0	67.99	151
5.50	33	34	148	0	67.05	148
5.60	32	33	145	0	66.12	145
5.70	31	32	143	0	65.20	143
5.80	30	30	140	0	64.29	140
5.90	29	29	138	0	63.40	138

CACTUS ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	28	28	135	0	62.51	135
6.10	27	27	133	0	61.64	133
6.20	26	26	130	0	60.78	130
6.30	25	25	128	0	59.93	128
6.40	24	24	126	0	59.09	126
6.50	23	23	123	0	58.26	123
6.60	22	23	121	0	57.45	121
6.70	22	22	119	0	56.65	119
6.80	21	21	117	0	55.85	117
6.90	20	20	115	0	55.07	115
7.00	19	20	113	0	54.30	113
7.10	19	19	111	0	53.55	111
7.20	18	19	109	0	52.80	109
7.30	18	18	107	0	52.06	107
7.40	17	17	105	0	51.34	105
7.50	17	17	103	0	50.62	103
7.60	16	16	101	0	49.92	101
7.70	16	16	100	0	49.22	100
7.80	15	15	98	0	48.54	98
7.90	15	15	96	0	47.87	96
8.00	14	14	95	0	47.20	95
8.10	14	14	93	0	46.55	93
8.20	13	14	91	0	45.91	91
8.30	13	13	90	0	45.27	90
8.40	13	13	88	0	44.65	88
8.50	12	12	87	0	44.04	87
8.60	12	12	85	0	43.43	85
8.70	12	12	84	0	42.83	84
8.80	11	11	82	0	42.25	82
8.90	11	11	81	0	41.67	81
9.00	11	11	80	0	41.10	80
9.10	10	10	78	0	40.54	78
9.20	10	10	77	0	39.98	77
9.30	10	10	76	0	39.44	76
9.40	9	10	75	0	38.90	75
9.50	9	9	73	0	38.37	73
9.60	9	9	72	0	37.85	72
9.70	9	9	71	0	37.34	71
9.80	9	9	70	0	36.83	70
9.90	8	8	69	0	36.34	69
10.00	8	8	68	0	35.85	68
10.10	8	8	66	0	35.36	66
10.20	8	8	65	0	34.89	65
10.30	8	8	64	0	34.42	64
10.40	7	7	63	0	33.96	63
10.50	7	7	62	0	33.50	62
10.60	7	7	61	0	33.05	61
10.70	7	7	60	0	32.61	60
10.80	7	7	59	0	32.18	59
10.90	6	7	58	0	31.75	58
11.00	0	3	57	0	31.30	57
11.10	0	0	56	0	30.83	56
11.20	0	0	56	0	30.38	56
11.30	0	0	55	0	29.92	55
11.40	0	0	54	0	29.48	54
11.50	0	0	53	0	29.05	53
11.60	0	0	52	0	28.62	52
11.70	0	0	51	0	28.20	51
11.80	0	0	50	0	27.78	50
11.90	0	0	49	0	27.38	49

CACTUS ROAD DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
12.00	0	0	48	0	26.98	48
12.10	0	0	48	0	26.58	48
12.20	0	0	47	0	26.20	47
12.30	0	0	46	0	25.82	46
12.40	0	0	45	0	25.44	45
12.50	0	0	45	0	25.07	45
12.60	0	0	44	0	24.71	44
12.70	0	0	43	0	24.35	43
12.80	0	0	42	0	24.00	42
12.90	0	0	42	0	23.66	42
13.00	0	0	41	0	23.32	41
13.10	0	0	40	0	22.99	40
13.20	0	0	40	0	22.66	40
13.30	0	0	39	0	22.33	39
13.40	0	0	39	0	22.01	39
13.50	0	0	38	0	21.70	38
13.60	0	0	37	0	21.39	37
13.70	0	0	37	0	21.09	37
13.80	0	0	36	0	20.79	36
13.90	0	0	36	0	20.49	36
14.00	0	0	35	0	20.20	35
14.10	0	0	35	0	19.92	35
14.20	0	0	34	0	19.63	34
14.30	0	0	34	0	19.36	34
14.40	0	0	33	0	19.08	33
14.50	0	0	33	0	18.81	33
14.60	0	0	32	0	18.55	32
14.70	0	0	32	0	18.29	32
14.80	0	0	31	0	18.03	31
14.90	0	0	31	0	17.78	31
15.00	0	0	30	0	17.53	30
15.10	0	0	30	0	17.28	30
15.20	0	0	29	0	17.04	29
15.30	0	0	29	0	16.80	29
15.40	0	0	29	0	16.56	29
15.50	0	0	28	0	16.33	28
15.60	0	0	28	0	16.10	28
15.70	0	0	27	0	15.87	27
15.80	0	0	27	0	15.65	27
15.90	0	0	27	0	15.43	27
16.00	0	0	26	0	15.21	26
16.10	0	0	26	0	15.00	26
16.20	0	0	26	0	14.79	26
16.30	0	0	25	0	14.58	25
16.40	0	0	25	0	14.37	25
16.50	0	0	24	0	14.17	24
16.60	0	0	24	0	13.97	24
16.70	0	0	24	0	13.77	24
16.80	0	0	24	0	13.58	24
16.90	0	0	23	0	13.39	23
17.00	0	0	23	0	13.20	23
17.10	0	0	23	0	13.01	23
17.20	0	0	22	0	12.83	22
17.30	0	0	22	0	12.65	22
17.40	0	0	22	0	12.47	22
17.50	0	0	21	0	12.29	21
17.60	0	0	21	0	12.12	21
17.70	0	0	21	0	11.94	21
17.80	0	0	21	0	11.77	21
17.90	0	0	20	0	11.61	20

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 105

NO PROJECT

t	q
0.00	0
0.10	118
0.20	463
0.30	940
0.40	1266
0.50	1504
0.60	1753
0.70	2190
0.80	2142
0.90	1628
1.00	980
1.10	616
1.20	395
1.30	253
1.40	165
1.50	107
1.60	69
1.70	47
1.80	31
1.90	19
2.00	12
2.10	9
2.20	6
2.30	3
2.40	1
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

CACTUS ROAD DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.25	2	1	5	0	0.00	5
0.50	6	4	5	0	0.00	5
0.75	22	14	5	0	0.18	5
1.00	38	30	6	0	0.68	6
1.25	54	46	7	0	1.49	7
1.50	67	60	8	0	2.58	8
1.75	74	70	9	0	3.83	9
2.00	82	78	11	0	5.21	11
2.25	90	86	13	0	6.70	13
2.50	97	93	16	0	8.31	16
2.75	104	101	18	0	10.02	18
3.00	112	108	21	0	11.81	21
3.25	118	115	24	0	13.69	24
3.50	127	122	28	0	15.65	28
3.75	151	139	32	0	17.87	32
4.00	194	173	37	0	20.67	37
4.25	323	259	46	0	25.07	46
4.50	494	409	61	0	32.25	61
4.75	653	573	85	0	42.33	85
5.00	898	775	121	0	55.85	121
5.25	746	822	161	0	69.51	161
5.50	704	725	195	0	80.45	195
5.75	433	568	219	0	87.67	219
6.00	241	337	227	0	89.95	227
6.25	241	241	228	0	90.24	228
6.50	227	234	228	0	90.36	228
6.75	203	215	227	0	90.11	227
7.00	182	192	225	0	89.43	225
7.25	162	172	221	0	88.40	221
7.50	143	152	217	0	87.07	217
7.75	125	134	212	0	85.46	212
8.00	108	116	206	0	83.61	206
8.25	94	101	199	0	81.59	199
8.50	82	88	192	0	79.44	192
8.75	72	77	185	0	77.21	185
9.00	63	68	178	0	74.93	178
9.25	56	60	170	0	72.64	170
9.50	50	53	163	0	70.36	163
9.75	45	47	157	0	68.10	157
10.00	40	42	150	0	65.88	150
10.25	36	38	143	0	63.70	143
10.50	33	34	137	0	61.58	137
10.75	30	31	131	0	59.50	131
11.00	27	28	126	0	57.49	126
11.25	24	26	120	0	55.54	120
11.50	22	23	115	0	53.65	115
11.75	20	21	110	0	51.82	110
12.00	19	20	105	0	50.05	105
12.25	17	18	101	0	48.34	101
12.50	16	17	96	0	46.70	96
12.75	15	15	92	0	45.11	92
13.00	14	14	88	0	43.58	88
13.25	13	13	85	0	42.10	85
13.50	12	12	81	0	40.67	81
13.75	11	11	78	0	39.30	78
14.00	10	11	75	0	37.98	75
14.25	9	10	72	0	36.70	72
14.50	9	9	69	0	35.48	69
14.75	8	9	66	0	34.29	66

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

CACTUS ROAD DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
15.00	0	4	63	0	33.07	63
15.25	0	0	60	0	31.83	60
15.50	0	0	58	0	30.64	58
15.75	0	0	55	0	29.50	55
16.00	0	0	53	0	28.41	53
16.25	0	0	50	0	27.37	50
16.50	0	0	48	0	26.37	48
16.75	0	0	46	0	25.41	46
17.00	0	0	44	0	24.49	44
17.25	0	0	43	0	23.61	43
17.50	0	0	41	0	22.76	41
17.75	0	0	39	0	21.95	39
18.00	0	0	38	0	21.17	38
18.25	0	0	36	0	20.41	36
18.50	0	0	35	0	19.69	35
18.75	0	0	34	0	19.00	34
19.00	0	0	32	0	18.33	32
19.25	0	0	31	0	17.68	31
19.50	0	0	30	0	17.06	30
19.75	0	0	29	0	16.46	29
20.00	0	0	28	0	15.88	28
20.25	0	0	27	0	15.32	27
20.50	0	0	26	0	14.78	26
20.75	0	0	25	0	14.26	25
21.00	0	0	24	0	13.76	24
21.25	0	0	23	0	13.28	23
21.50	0	0	23	0	12.81	23
21.75	0	0	22	0	12.35	22
22.00	0	0	21	0	11.92	21
22.25	0	0	21	0	11.49	21
22.50	0	0	20	0	11.08	20
22.75	0	0	19	0	10.68	19
23.00	0	0	19	0	10.30	19
23.25	0	0	18	0	9.92	18
23.50	0	0	17	0	9.56	17
23.75	0	0	17	0	9.21	17
24.00	0	0	16	0	8.87	16
24.25	0	0	16	0	8.54	16
24.50	0	0	15	0	8.22	15
24.75	0	0	15	0	7.91	15
25.00	0	0	15	0	7.61	15
25.25	0	0	14	0	7.32	14
25.50	0	0	14	0	7.04	14
25.75	0	0	13	0	6.76	13
26.00	0	0	13	0	6.49	13
26.25	0	0	13	0	6.23	13
26.50	0	0	12	0	5.98	12
26.75	0	0	12	0	5.73	12
27.00	0	0	12	0	5.50	12
27.25	0	0	11	0	5.26	11
27.50	0	0	11	0	5.04	11
27.75	0	0	11	0	4.82	11
28.00	0	0	10	0	4.60	10
28.25	0	0	10	0	4.39	10
28.50	0	0	10	0	4.19	10
28.75	0	0	10	0	3.99	10
29.00	0	0	9	0	3.80	9
29.25	0	0	9	0	3.61	9
29.50	0	0	9	0	3.43	9
29.75	0	0	9	0	3.25	9

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-15

Frequency in years 100
Drainage area in sq. mi. 0.240
Length in ft. 4750
Elevation, ft. msl:
Top of Basin 1365
Bottom of Basin 1335
Basin Slope in % 0.6
Basin Width in ft. 1400
Time of Concentraion in hrs. 0.83
Precipitation:
Duration in hrs. 0.83
Point Precipitation in inches 2.49
Rainfall intensity in./hr. 3.00
Pervious Area in sq. mi. 0.120
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.120
Curve Number 96
Runoff (Q) in inches 2.00
Time of Peak in hrs. 0.55
Peak Discharge in cfs 421
Runoff Volume in af. 26

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-16

Frequency in years 100
Drainage area in sq. mi. 0.036
Length in ft. 2100
Elevation, ft. msl:
    Top of Basin 1365
    Bottom of Basin 1352
Basin Slope in % 0.6
Basin Width in ft. 500
Time of Concentraion in hrs. 0.37
Precipitation:
    Duration in hrs. 0.37
    Point Precipitation in inches 1.85
    Rainfall intensity in./hr. 5.00
Pervious Area in sq. mi. 0.018
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.018
Curve Number 97
Runoff (Q) in inches 1.57
Time of Peak in hrs. 0.25
Peak Discharge in cfs 111
Runoff Volume in af. 3

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 109

t	q	t	q	t	q
0.00	0	6.00	183	12.00	63
0.10	37	6.10	180	12.10	62
0.20	147	6.20	176	12.20	50
0.30	401	6.30	173	12.30	49
0.40	684	6.40	170	12.40	48
0.50	974	6.50	166	12.50	48
0.60	1158	6.60	163	12.60	47
0.70	1228	6.70	160	12.70	46
0.80	1228	6.80	157	12.80	45
0.90	1199	6.90	154	12.90	45
1.00	1251	7.00	151	13.00	44
1.10	1158	7.10	148	13.10	43
1.20	972	7.20	146	13.20	42
1.30	831	7.30	143	13.30	42
1.40	730	7.40	140	13.40	41
1.50	655	7.50	138	13.50	40
1.60	604	7.60	135	13.60	40
1.70	833	7.70	132	13.70	39
1.80	793	7.80	130	13.80	39
1.90	617	7.90	128	13.90	38
2.00	541	8.00	125	14.00	37
2.10	482	8.10	123	14.10	37
2.20	431	8.20	121	14.20	36
2.30	390	8.30	119	14.30	36
2.40	379	8.40	117	14.40	35
2.50	370	8.50	114	14.50	35
2.60	361	8.60	112	14.60	34
2.70	354	8.70	110	14.70	34
2.80	348	8.80	108	14.80	33
2.90	340	8.90	107	14.90	33
3.00	333	9.00	105	15.00	32
3.10	327	9.10	103	15.10	32
3.20	320	9.20	101	15.20	31
3.30	313	9.30	99	15.30	31
3.40	307	9.40	98	15.40	30
3.50	300	9.50	96	15.50	30
3.60	294	9.60	94	15.60	29
3.70	288	9.70	93	15.70	29
3.80	283	9.80	91	15.80	29
3.90	277	9.90	90	15.90	28
4.00	272	10.00	88	16.00	28
4.10	267	10.10	87	16.10	27
4.20	262	10.20	85	16.20	27
4.30	257	10.30	84	16.30	27
4.40	252	10.40	82	16.40	26
4.50	247	10.50	81	16.50	26
4.60	242	10.60	80	16.60	26
4.70	237	10.70	78	16.70	25
4.80	232	10.80	77	16.80	25
4.90	228	10.90	76	16.90	24
5.00	223	11.00	75	17.00	24
5.10	219	11.10	73	17.10	24
5.20	215	11.20	72	17.20	24
5.30	210	11.30	71	17.30	23
5.40	206	11.40	70	17.40	23
5.50	202	11.50	69	17.50	23
5.60	198	11.60	67	17.60	22
5.70	194	11.70	66	17.70	22
5.80	191	11.80	65	17.80	22
5.90	187	11.90	64	17.90	21

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 109

NO PROJECT

t	q
0.00	0
0.10	37
0.20	112
0.30	317
0.40	623
0.50	1059
0.60	1548
0.70	2031
0.80	2367
0.90	2514
1.00	2655
1.10	2997
1.20	2809
1.30	2163
1.40	1387
1.50	914
1.60	619
1.70	424
1.80	296
1.90	207
2.00	146
2.10	105
2.20	75
2.30	52
2.40	38
2.50	28
2.60	20
2.70	14
2.80	9
2.90	6
3.00	5
3.10	4
3.20	3
3.30	2
3.40	1
3.50	1
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 109

t	q	t	q
0.00	0	15.00	82
0.25	0	15.25	66
0.50	0	15.50	63
0.75	16	15.75	60
1.00	28	16.00	58
1.25	44	16.25	55
1.50	55	16.50	53
1.75	64	16.75	50
2.00	69	17.00	48
2.25	75	17.25	46
2.50	81	17.50	44
2.75	88	17.75	43
3.00	94	18.00	41
3.25	100	18.25	39
3.50	106	18.50	38
3.75	112	18.75	36
4.00	129	19.00	35
4.25	206	19.25	34
4.50	300	19.50	32
4.75	629	19.75	31
5.00	735	20.00	30
5.25	649	20.25	29
5.50	535	20.50	28
5.75	421	20.75	27
6.00	407	21.00	26
6.25	403	21.25	25
6.50	393	21.50	24
6.75	384	21.75	23
7.00	373	22.00	23
7.25	347	22.25	22
7.50	322	22.50	21
7.75	301	22.75	21
8.00	287	23.00	20
8.25	277	23.25	19
8.50	266	23.50	19
8.75	255	23.75	18
9.00	244	24.00	17
9.25	233	24.25	17
9.50	223	24.50	16
9.75	212	24.75	16
10.00	202	25.00	15
10.25	194	25.25	15
10.50	185	25.50	15
10.75	176	25.75	14
11.00	168	26.00	14
11.25	160	26.25	13
11.50	153	26.50	13
11.75	146	26.75	13
12.00	139	27.00	12
12.25	133	27.25	12
12.50	127	27.50	12
12.75	122	27.75	11
13.00	116	28.00	11
13.25	111	28.25	11
13.50	106	28.50	10
13.75	102	28.75	10
14.00	97	29.00	10
14.25	93	29.25	10
14.50	90	29.50	9
14.75	86	29.75	9

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-14

Frequency in years 100
Drainage area in sq. mi. 0.235
Length in ft. 4700
Elevation, ft. msl:
Top of Basin 1365
Bottom of Basin 1333
Basin Slope in % 0.7
Basin Width in ft. 1400
Time of Concentraion in hrs. 0.79
Precipitation:
Duration in hrs. 0.79
Point Precipitation in inches 2.48
Rainfall intensity in./hr. 3.14
Pervious Area in sq. mi. 0.118
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.117
Curve Number 96
Runoff (Q) in inches 2.01
Time of Peak in hrs. 0.53
Peak Discharge in cfs 433
Runoff Volume in af. 25

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-17

Frequency in years 100
Drainage area in sq. mi. 0.063
Length in ft. 1320
Elevation, ft. msl:
Top of Basin 1336
Bottom of Basin 1332
Basin Slope in % 0.3
Basin Width in ft. 1000
Time of Concentraion in hrs. 0.33
Precipitation:
Duration in hrs. 0.33
Point Precipitation in inches 1.82
Rainfall intensity in./hr. 5.45
Pervious Area in sq. mi. 0.032
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.031
Curve Number 98
Runoff (Q) in inches 1.55
Time of Peak in hrs. 0.22
Peak Discharge in cfs 212
Runoff Volume in af. 5

CHAPARRAL HIGH SCHOOL DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 110

TOTAL OUTFLOW AT CP 111

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	40	20	0	0	0.16	0
0.20	123	81	0	0	0.83	0
0.30	258	190	1	0	2.40	1
0.40	381	319	2	0	5.02	2
0.50	431	406	4	0	8.34	4
0.60	420	425	5	0	11.82	5
0.70	365	393	7	0	15.01	7
0.80	290	327	8	0	17.64	8
0.90	200	245	9	60	19.10	69
1.00	146	173	9	164	19.10	173
1.10	109	128	9	119	19.10	128
1.20	81	95	9	86	19.10	95
1.30	59	70	9	61	19.10	70
1.40	44	51	9	42	19.10	51
1.50	32	38	9	29	19.10	38
1.60	23	28	9	19	19.10	28
1.70	17	20	9	11	19.10	20
1.80	13	15	9	6	19.10	15
1.90	9	11	9	2	19.10	11
2.00	7	8	9	0	19.09	9
2.10	5	6	9	0	19.07	9
2.20	4	5	9	0	19.03	9
2.30	3	3	9	0	18.98	9
2.40	2	3	9	0	18.93	9
2.50	1	2	9	0	18.87	9
2.60	0	1	9	0	18.80	9
2.70	0	0	9	0	18.73	9
2.80	0	0	9	0	18.66	9
2.90	0	0	9	0	18.59	9
3.00	0	0	9	0	18.52	9
3.10	0	0	9	0	18.44	9
3.20	0	0	9	0	18.37	9
3.30	0	0	9	0	18.30	9
3.40	0	0	9	0	18.23	9
3.50	0	0	9	0	18.16	9
3.60	0	0	8	0	18.09	8
3.70	0	0	8	0	18.02	8
3.80	0	0	8	0	17.95	8
3.90	0	0	8	0	17.88	8
4.00	0	0	8	0	17.81	8
4.10	0	0	8	0	17.74	8
4.20	0	0	8	0	17.68	8
4.30	0	0	8	0	17.61	8
4.40	0	0	8	0	17.54	8
4.50	0	0	8	0	17.47	8
4.60	0	0	8	0	17.40	8
4.70	0	0	8	0	17.34	8
4.80	0	0	8	0	17.27	8
4.90	0	0	8	0	17.21	8
5.00	0	0	8	0	17.14	8
5.10	0	0	8	0	17.07	8
5.20	0	0	8	0	17.01	8
5.30	0	0	8	0	16.94	8
5.40	0	0	8	0	16.88	8
5.50	0	0	8	0	16.81	8
5.60	0	0	8	0	16.75	8
5.70	0	0	8	0	16.69	8
5.80	0	0	8	0	16.62	8
5.90	0	0	8	0	16.56	8

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

CHAPARRAL HIGH SCHOOL DETENTION BASIN

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 110

TOTAL OUTFLOW AT CP 111

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	8	0	16.50	8
6.10	0	0	8	0	16.43	8
6.20	0	0	8	0	16.37	8
6.30	0	0	8	0	16.31	8
6.40	0	0	8	0	16.25	8
6.50	0	0	7	0	16.18	7
6.60	0	0	7	0	16.12	7
6.70	0	0	7	0	16.06	7
6.80	0	0	7	0	16.00	7
6.90	0	0	7	0	15.94	7
7.00	0	0	7	0	15.88	7
7.10	0	0	7	0	15.82	7
7.20	0	0	7	0	15.76	7
7.30	0	0	7	0	15.70	7
7.40	0	0	7	0	15.64	7
7.50	0	0	7	0	15.58	7
7.60	0	0	7	0	15.52	7
7.70	0	0	7	0	15.46	7
7.80	0	0	7	0	15.41	7
7.90	0	0	7	0	15.35	7
8.00	0	0	7	0	15.29	7
8.10	0	0	7	0	15.23	7
8.20	0	0	7	0	15.17	7
8.30	0	0	7	0	15.12	7
8.40	0	0	7	0	15.06	7
8.50	0	0	7	0	15.00	7
8.60	0	0	7	0	14.95	7
8.70	0	0	7	0	14.89	7
8.80	0	0	7	0	14.84	7
8.90	0	0	7	0	14.78	7
9.00	0	0	7	0	14.72	7
9.10	0	0	7	0	14.67	7
9.20	0	0	7	0	14.61	7
9.30	0	0	7	0	14.56	7
9.40	0	0	7	0	14.50	7
9.50	0	0	7	0	14.45	7
9.60	0	0	7	0	14.40	7
9.70	0	0	7	0	14.34	7
9.80	0	0	6	0	14.29	6
9.90	0	0	6	0	14.24	6
10.00	0	0	6	0	14.18	6
10.10	0	0	6	0	14.13	6
10.20	0	0	6	0	14.08	6
10.30	0	0	6	0	14.03	6
10.40	0	0	6	0	13.97	6
10.50	0	0	6	0	13.92	6
10.60	0	0	6	0	13.87	6
10.70	0	0	6	0	13.82	6
10.80	0	0	6	0	13.77	6
10.90	0	0	6	0	13.72	6
11.00	0	0	6	0	13.66	6
11.10	0	0	6	0	13.61	6
11.20	0	0	6	0	13.56	6
11.30	0	0	6	0	13.51	6
11.40	0	0	6	0	13.46	6
11.50	0	0	6	0	13.41	6
11.60	0	0	6	0	13.36	6
11.70	0	0	6	0	13.31	6
11.80	0	0	6	0	13.27	6
11.90	0	0	6	0	13.22	6

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 111

NO PROJECT

t	q
0.00	0
0.10	84
0.20	250
0.30	340
0.40	485
0.50	718
0.60	835
0.70	946
0.80	1352
0.90	1904
1.00	2491
1.10	3058
1.20	3064
1.30	2264
1.40	1370
1.50	856
1.60	553
1.70	367
1.80	245
1.90	167
2.00	114
2.10	78
2.20	52
2.30	37
2.40	25
2.50	19
2.60	13
2.70	9
2.80	5
2.90	3
3.00	2
3.10	2
3.20	1
3.30	1
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

CHAPARRAL HIGH SCHOOL DETENTION BASIN

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

INFLOW AT CP 110
TOTAL OUTFLOW AT CP 111

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.25	0	0	0	0	0.00	0
0.50	0	0	0	0	0.00	0
0.75	5	3	0	0	0.05	0
1.00	10	8	0	0	0.21	0
1.25	16	13	0	0	0.47	0
1.50	16	16	0	0	0.79	0
1.75	18	17	1	0	1.13	1
2.00	19	18	1	0	1.49	1
2.25	20	19	1	0	1.88	1
2.50	21	20	1	0	2.28	1
2.75	22	21	1	0	2.69	1
3.00	22	22	1	0	3.12	1
3.25	23	22	1	0	3.55	1
3.50	23	23	2	0	3.99	2
3.75	24	24	2	0	4.43	2
4.00	30	27	2	0	4.95	2
4.25	71	51	2	0	5.95	2
4.50	102	86	3	0	7.67	3
4.75	260	181	5	0	11.31	5
5.00	219	240	7	0	16.10	7
5.25	71	145	9	0	18.91	9
5.50	51	61	9	43	19.10	52
5.75	35	43	9	34	19.10	43
6.00	24	29	9	20	19.10	29
6.25	21	22	9	13	19.10	22
6.50	20	21	9	12	19.10	21
6.75	18	19	9	10	19.10	19
7.00	16	17	9	8	19.10	17
7.25	5	10	9	1	19.10	10
7.50	0	3	9	0	18.97	9
7.75	0	0	9	0	18.78	9
8.00	0	0	9	0	18.60	9
8.25	0	0	9	0	18.42	9
8.50	0	0	9	0	18.24	9
8.75	0	0	9	0	18.06	9
9.00	0	0	8	0	17.89	8
9.25	0	0	8	0	17.72	8
9.50	0	0	8	0	17.55	8
9.75	0	0	8	0	17.38	8
10.00	0	0	8	0	17.21	8
10.25	0	0	8	0	17.05	8
10.50	0	0	8	0	16.88	8
10.75	0	0	8	0	16.72	8
11.00	0	0	8	0	16.56	8
11.25	0	0	8	0	16.40	8
11.50	0	0	8	0	16.25	8
11.75	0	0	7	0	16.09	7
12.00	0	0	7	0	15.94	7
12.25	0	0	7	0	15.79	7
12.50	0	0	7	0	15.64	7
12.75	0	0	7	0	15.49	7
13.00	0	0	7	0	15.35	7
13.25	0	0	7	0	15.20	7
13.50	0	0	7	0	15.06	7
13.75	0	0	7	0	14.92	7
14.00	0	0	7	0	14.78	7
14.25	0	0	7	0	14.64	7
14.50	0	0	7	0	14.50	7
14.75	0	0	7	0	14.37	7

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 112

t	q	t	q	t	q
0.00	0	6.00	212	12.00	64
0.10	0	6.10	208	12.10	63
0.20	157	6.20	204	12.20	62
0.30	562	6.30	200	12.30	50
0.40	1136	6.40	197	12.40	49
0.50	1636	6.50	193	12.50	48
0.60	2159	6.60	190	12.60	48
0.70	2593	6.70	187	12.70	47
0.80	3005	6.80	183	12.80	46
0.90	3457	6.90	180	12.90	45
1.00	3997	7.00	176	13.00	45
1.10	3976	7.10	173	13.10	44
1.20	3415	7.20	171	13.20	43
1.30	2798	7.30	167	13.30	42
1.40	2215	7.40	164	13.40	42
1.50	3478	7.50	161	13.50	41
1.60	3528	7.60	159	13.60	40
1.70	3309	7.70	156	13.70	40
1.80	3334	7.80	153	13.80	39
1.90	2873	7.90	151	13.90	39
2.00	2108	8.00	148	14.00	38
2.10	1506	8.10	145	14.10	37
2.20	1105	8.20	143	14.20	37
2.30	850	8.30	141	14.30	36
2.40	673	8.40	138	14.40	36
2.50	571	8.50	136	14.50	35
2.60	501	8.60	134	14.60	35
2.70	452	8.70	132	14.70	34
2.80	418	8.80	129	14.80	34
2.90	403	8.90	127	14.90	33
3.00	390	9.00	125	15.00	33
3.10	379	9.10	123	15.10	32
3.20	369	9.20	121	15.20	32
3.30	360	9.30	119	15.30	31
3.40	351	9.40	117	15.40	31
3.50	343	9.50	115	15.50	30
3.60	335	9.60	113	15.60	30
3.70	328	9.70	112	15.70	29
3.80	321	9.80	110	15.80	29
3.90	315	9.90	108	15.90	29
4.00	309	10.00	106	16.00	28
4.10	303	10.10	94	16.10	28
4.20	298	10.20	93	16.20	27
4.30	292	10.30	91	16.30	27
4.40	287	10.40	90	16.40	27
4.50	281	10.50	89	16.50	26
4.60	276	10.60	87	16.60	26
4.70	271	10.70	86	16.70	26
4.80	266	10.80	85	16.80	25
4.90	261	10.90	83	16.90	25
5.00	256	11.00	82	17.00	24
5.10	251	11.10	81	17.10	24
5.20	246	11.20	79	17.20	24
5.30	242	11.30	78	17.30	24
5.40	237	11.40	77	17.40	23
5.50	233	11.50	76	17.50	23
5.60	229	11.60	75	17.60	23
5.70	224	11.70	73	17.70	22
5.80	220	11.80	72	17.80	22
5.90	216	11.90	71	17.90	22

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 112

NO PROJECT

t	q
0.00	0
0.10	204
0.20	784
0.30	1368
0.40	1937
0.50	2451
0.60	2719
0.70	3224
0.80	4261
0.90	5623
1.00	7450
1.10	9152
1.20	10312
1.30	10624
1.40	9809
1.50	8248
1.60	6507
1.70	5132
1.80	4158
1.90	3173
2.00	2235
2.10	1488
2.20	1016
2.30	707
2.40	484
2.50	336
2.60	231
2.70	159
2.80	110
2.90	75
3.00	49
3.10	29
3.20	18
3.30	13
3.40	8
3.50	4
3.60	1
3.70	1
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 112

t	q	t	q
0.00	0	15.00	93
0.25	0	15.25	77
0.50	0	15.50	74
0.75	21	15.75	70
1.00	50	16.00	68
1.25	103	16.25	65
1.50	150	16.50	62
1.75	187	16.75	60
2.00	212	17.00	57
2.25	235	17.25	55
2.50	258	17.50	53
2.75	274	17.75	51
3.00	289	18.00	49
3.25	302	18.25	47
3.50	316	18.50	45
3.75	331	18.75	44
4.00	364	19.00	42
4.25	504	19.25	41
4.50	747	19.50	39
4.75	1473	19.75	38
5.00	2126	20.00	37
5.25	2725	20.25	35
5.50	2723	20.50	34
5.75	2354	20.75	33
6.00	2036	21.00	32
6.25	1431	21.25	31
6.50	973	21.50	30
6.75	813	21.75	29
7.00	717	22.00	28
7.25	626	22.25	27
7.50	548	22.50	26
7.75	461	22.75	26
8.00	390	23.00	25
8.25	333	23.25	24
8.50	308	23.50	23
8.75	289	23.75	23
9.00	277	24.00	22
9.25	266	24.25	21
9.50	255	24.50	21
9.75	243	24.75	20
10.00	232	25.00	20
10.25	223	25.25	19
10.50	213	25.50	19
10.75	203	25.75	18
11.00	194	26.00	18
11.25	186	26.25	17
11.50	178	26.50	17
11.75	170	26.75	16
12.00	163	27.00	16
12.25	156	27.25	15
12.50	149	27.50	15
12.75	144	27.75	15
13.00	137	28.00	14
13.25	131	28.25	14
13.50	126	28.50	14
13.75	122	28.75	13
14.00	116	29.00	13
14.25	112	29.25	13
14.50	108	29.50	12
14.75	104	29.75	12

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-15

Frequency in years 100
Drainage area in sq. mi. 0.424
Length in ft. 4000
Elevation, ft. msl:
    Top of Basin 1353
    Bottom of Basin 1338
Basin Slope in % 0.4
Basin Width in ft. 30000
Time of Concentraion in hrs. 0.91
Precipitation:
    Duration in hrs. 0.91
    Point Precipitation in inches 2.54
    Rainfall intensity in./hr. 2.80
Pervious Area in sq. mi. 0.212
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.212
Curve Number 95
Runoff (Q) in inches 2.03
Time of Peak in hrs. 0.60
Peak Discharge in cfs 688
Runoff Volume in af. 46

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 114

t	q	t	q	t	q
0.00	0	6.00	220	12.00	72
0.10	53	6.10	216	12.10	71
0.20	158	6.20	212	12.20	64
0.30	324	6.30	208	12.30	63
0.40	684	6.40	204	12.40	62
0.50	1215	6.50	200	12.50	50
0.60	1824	6.60	197	12.60	49
0.70	2290	6.70	193	12.70	48
0.80	2732	6.80	190	12.80	48
0.90	3061	6.90	187	12.90	47
1.00	3344	7.00	183	13.00	46
1.10	3712	7.10	180	13.10	45
1.20	4189	7.20	176	13.20	45
1.30	4127	7.30	173	13.30	44
1.40	3530	7.40	171	13.40	43
1.50	2886	7.50	167	13.50	42
1.60	2281	7.60	164	13.60	42
1.70	3528	7.70	161	13.70	41
1.80	3566	7.80	159	13.80	40
1.90	3339	7.90	156	13.90	40
2.00	3357	8.00	153	14.00	39
2.10	2891	8.10	151	14.10	39
2.20	2121	8.20	148	14.20	38
2.30	1516	8.30	145	14.30	37
2.40	1113	8.40	143	14.40	37
2.50	857	8.50	141	14.50	36
2.60	678	8.60	138	14.60	36
2.70	575	8.70	136	14.70	35
2.80	504	8.80	134	14.80	35
2.90	453	8.90	132	14.90	34
3.00	418	9.00	129	15.00	34
3.10	403	9.10	127	15.10	33
3.20	390	9.20	125	15.20	33
3.30	379	9.30	123	15.30	32
3.40	369	9.40	121	15.40	32
3.50	360	9.50	119	15.50	31
3.60	351	9.60	117	15.60	31
3.70	343	9.70	115	15.70	30
3.80	335	9.80	113	15.80	30
3.90	328	9.90	112	15.90	29
4.00	321	10.00	110	16.00	29
4.10	315	10.10	108	16.10	29
4.20	309	10.20	106	16.20	28
4.30	303	10.30	94	16.30	28
4.40	298	10.40	93	16.40	27
4.50	292	10.50	91	16.50	27
4.60	287	10.60	90	16.60	27
4.70	281	10.70	89	16.70	26
4.80	276	10.80	87	16.80	26
4.90	271	10.90	86	16.90	26
5.00	266	11.00	85	17.00	25
5.10	261	11.10	83	17.10	25
5.20	256	11.20	82	17.20	24
5.30	251	11.30	81	17.30	24
5.40	246	11.40	79	17.40	24
5.50	242	11.50	78	17.50	24
5.60	237	11.60	77	17.60	23
5.70	233	11.70	76	17.70	23
5.80	229	11.80	75	17.80	23
5.90	224	11.90	73	17.90	22

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 114

NO PROJECT

t	q
0.00	0
0.10	53
0.20	158
0.30	527
0.40	1311
0.50	2022
0.60	2625
0.70	3105
0.80	3293
0.90	3692
1.00	4600
1.10	5878
1.20	7643
1.30	9302
1.40	10427
1.50	10712
1.60	9876
1.70	8299
1.80	6544
1.90	5211
2.00	4180
2.10	3191
2.20	2248
2.30	1498
2.40	1023
2.50	713
2.60	489
2.70	340
2.80	234
2.90	160
3.00	110
3.10	75
3.20	49
3.30	29
3.40	18
3.50	13
3.60	8
3.70	4
3.80	1
3.90	1
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 114

t	q	t	q
0.00	0	15.00	104
0.25	0	15.25	93
0.50	9	15.50	77
0.75	19	15.75	74
1.00	49	16.00	70
1.25	79	16.25	68
1.50	134	16.50	65
1.75	184	16.75	62
2.00	223	17.00	60
2.25	249	17.25	57
2.50	274	17.50	55
2.75	298	17.75	53
3.00	315	18.00	51
3.25	331	18.25	49
3.50	346	18.50	47
3.75	371	18.75	45
4.00	459	19.00	44
4.25	548	19.25	42
4.50	974	19.50	41
4.75	1142	19.75	39
5.00	1601	20.00	38
5.25	2217	20.25	37
5.50	2788	20.50	35
5.75	2766	20.75	34
6.00	2392	21.00	33
6.25	2072	21.25	32
6.50	1464	21.50	31
6.75	1001	21.75	30
7.00	823	22.00	29
7.25	717	22.25	28
7.50	626	22.50	27
7.75	548	22.75	26
8.00	461	23.00	26
8.25	390	23.25	25
8.50	333	23.50	24
8.75	308	23.75	23
9.00	289	24.00	23
9.25	277	24.25	22
9.50	266	24.50	21
9.75	255	24.75	21
10.00	243	25.00	20
10.25	232	25.25	20
10.50	223	25.50	19
10.75	213	25.75	19
11.00	203	26.00	18
11.25	194	26.25	18
11.50	186	26.50	17
11.75	178	26.75	17
12.00	170	27.00	16
12.25	163	27.25	16
12.50	156	27.50	15
12.75	149	27.75	15
13.00	144	28.00	15
13.25	137	28.25	14
13.50	131	28.50	14
13.75	126	28.75	14
14.00	122	29.00	13
14.25	116	29.25	13
14.50	112	29.50	13
14.75	108	29.75	12

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-18

Frequency in years 100
Drainage area in sq. mi. 0.333
Length in ft. 4000
Elevation, ft. msl:
Top of Basin 1334
Bottom of Basin 1320
Basin Slope in % 0.4
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.94
Precipitation:
Duration in hrs. 0.94
Point Precipitation in inches 2.60
Rainfall intensity in./hr. 2.77
Pervious Area in sq. mi. 0.167
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.166
Curve Number 95
Runoff (Q) in inches 2.07
Time of Peak in hrs. 0.63
Peak Discharge in cfs 532
Runoff Volume in af. 37

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 113

t	q
0.00	0
0.10	38
0.20	112
0.30	230
0.40	381
0.50	491
0.60	529
0.70	523
0.80	469
0.90	400
1.00	306
1.10	228
1.20	174
1.30	137
1.40	107
1.50	81
1.60	63
1.70	49
1.80	38
1.90	29
2.00	22
2.10	17
2.20	13
2.30	10
2.40	8
2.50	6
2.60	5
2.70	4
2.80	3
2.90	2
3.00	1
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 113

NO PROJECT

t	q
0.00	0
0.10	38
0.20	112
0.30	230
0.40	381
0.50	491
0.60	529
0.70	523
0.80	469
0.90	400
1.00	306
1.10	228
1.20	174
1.30	137
1.40	107
1.50	81
1.60	63
1.70	49
1.80	38
1.90	29
2.00	22
2.10	17
2.20	13
2.30	10
2.40	8
2.50	6
2.60	5
2.70	4
2.80	3
2.90	2
3.00	1
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 113

t	q
0.00	0
0.25	0
0.50	7
0.75	15
1.00	22
1.25	23
1.50	25
1.75	27
2.00	28
2.25	29
2.50	31
2.75	31
3.00	32
3.25	33
3.50	34
3.75	43
4.00	101
4.25	145
4.50	369
4.75	310
5.00	101
5.25	72
5.50	50
5.75	33
6.00	30
6.25	28
6.50	26
6.75	22
7.00	7
7.25	0
7.50	0
7.75	0
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-1

Frequency in years 100
Drainage area in sq. mi. 0.314
Length in ft. 4400
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1470
Basin Slope in % 0.9
Basin Width in ft. 2000
Time of Concentraion in hrs. 0.50
Precipitation:
Duration in hrs. 0.50
Point Precipitation in inches 2.07
Rainfall intensity in./hr. 4.18
Pervious Area in sq. mi. 0.157
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.157
Curve Number 97
Runoff (Q) in inches 1.73
Time of Peak in hrs. 0.33
Peak Discharge in cfs 795
Runoff Volume in af. 29

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-2

Frequency in years 100
Drainage area in sq. mi. 0.250
Length in ft. 4000
Elevation, ft. msl:
Top of Basin 1470
Bottom of Basin 1435
Basin Slope in % 0.9
Basin Width in ft. 1700
Time of Concentraion in hrs. 0.47
Precipitation:
Duration in hrs. 0.47
Point Precipitation in inches 2.03
rainfall intensity in./hr. 4.34
Pervious Area in sq. mi. 0.125
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.125
Curve Number 97
Runoff (Q) in inches 1.70
Time of Peak in hrs. 0.31
Peak Discharge in cfs 660
Runoff Volume in af. 23

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-3

Frequency in years 100
Drainage area in sq. mi. 0.165
Length in ft. 2700
Elevation, ft. msl:
Top of Basin 1435
Bottom of Basin 1412
Basin Slope in % 0.9
Basin Width in ft. 1700
Time of Concentraion in hrs. 0.35
Precipitation:
Duration in hrs. 0.35
Point Precipitation in inches 1.78
Rainfall intensity in./hr. 5.11
Pervious Area in sq. mi. 0.083
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.082
Curve Number 98
Runoff (Q) in inches 1.51
Time of Peak in hrs. 0.23
Peak Discharge in cfs 520
Runoff Volume in af. 13

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-4

Frequency in years 100
Drainage area in sq. mi. 0.113
Length in ft. 2640
Elevation, ft. msl:
Top of Basin 1412
Bottom of Basin 1390
Basin Slope in % 0.8
Basin Width in ft. 1400
Time of Concentraion in hrs. 0.35
Precipitation:
Duration in hrs. 0.35
Point Precipitation in inches 1.76
Rainfall intensity in./hr. 5.09
Pervious Area in sq. mi. 0.057
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.056
Curve Number 98
Runoff (Q) in inches 1.49
Time of Peak in hrs. 0.23
Peak Discharge in cfs 354
Runoff Volume in af. 9

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-5

Frequency in years 100
Drainage area in sq. mi. 0.356
Length in ft. 4800
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1465
Basin Slope in % 0.9
Basin Width in ft. 2000
Time of Concentraion in hrs. 0.52
Precipitation:
Duration in hrs. 0.52
Point Precipitation in inches 2.17
Rainfall intensity in./hr. 4.15
Pervious Area in sq. mi. 0.178
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.178
Curve Number 97
Runoff (Q) in inches 1.81
Time of Peak in hrs. 0.35
Peak Discharge in cfs 896
Runoff Volume in af. 34

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE REA LOCATION

DC-6

Frequency in years 100
Drainage area in sq. mi. 0.392
Length in ft. 4800
Elevation, ft. msl:
Top of Basin 1465
Bottom of Basin 1420
Basin Slope in % 0.9
Basin Width in ft. 2300
Time of Concentraion in hrs. 0.52
Precipitation:
Duration in hrs. 0.52
Point Precipitation in inches 2.17
Rainfall intensity in./hr. 4.15
Pervious Area in sq. mi. 0.196
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.196
Curve Number 97
Runoff (Q) in inches 1.81
Time of Peak in hrs. 0.35
Peak Discharge in cfs 986
Runoff Volume in af. 38

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-7

Frequency in years 100
Drainage area in sq. mi. 0.146
Length in ft. 3750
Elevation, ft. msl:
Top of Basin 1420
Bottom of Basin 1390
Basin Slope in % 0.8
Basin Width in ft. 1100
Time of Concentraion in hrs. 0.46
Precipitation:
Duration in hrs. 0.46
Point Precipitation in inches 2.03
Rainfall intensity in./hr. 4.41
Pervious Area in sq. mi. 0.073
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.073
Curve Number 97
Runoff (Q) in inches 1.70
Time of Peak in hrs. 0.31
Peak Discharge in cfs 392
Runoff Volume in af. 13

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-8

Frequency in years 100
Drainage area in sq. mi. 1.237
Length in ft. 8800
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1428
Basin Slope in % 0.9
Basin Width in ft. 3600
Time of Concentraion in hrs. 0.84
Precipitation:
Duration in hrs. 0.84
Point Precipitation in inches 2.50
Rainfall intensity in./hr. 2.99
Pervious Area in sq. mi. 0.619
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.618
Curve Number 95
Runoff (Q) in inches 2.01
Time of Peak in hrs. 0.56
Peak Discharge in cfs 2159
Runoff Volume in af. 133

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-9

Frequency in years 100
Drainage area in sq. mi. 0.244
Length in ft. 4600
Elevation, ft. msl:
Top of Basin 1428
Bottom of Basin 1396
Basin Slope in % 0.7
Basin Width in ft. 1800
Time of Concentraion in hrs. 0.57
Precipitation:
Duration in hrs. 0.57
Point Precipitation in inches 2.19
Rainfall intensity in./hr. 3.86
Pervious Area in sq. mi. 0.122
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.122
Curve Number 97
Runoff (Q) in inches 1.81
Time of Peak in hrs. 0.38
Peak Discharge in cfs 566
Runoff Volume in af. 24

DESERT COVE SYSTEM

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 401

t	q
0.00	0
0.10	215
0.20	631
0.30	1148
0.40	2033
0.50	2690
0.60	3053
0.70	3632
0.80	4057
0.90	4147
1.00	3799
1.10	3137
1.20	2550
1.30	2009
1.40	1434
1.50	1012
1.60	736
1.70	550
1.80	404
1.90	295
2.00	217
2.10	158
2.20	114
2.30	85
2.40	63
2.50	48
2.60	36
2.70	27
2.80	21
2.90	16
3.00	12
3.10	8
3.20	4
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

DESERT COVE SYSTEM

100-YEAR FREQUENCY WINTER STORM HYDROGRAPH

AT CP 401

t	q
0.00	0
0.25	2
0.50	12
0.75	41
1.00	82
1.25	145
1.50	193
1.75	229
2.00	244
2.25	259
2.50	273
2.75	286
3.00	295
3.25	304
3.50	314
3.75	349
4.00	447
4.25	740
4.50	1196
4.75	1969
5.00	2223
5.25	2345
5.50	1605
5.75	692
6.00	494
6.25	367
6.50	291
6.75	260
7.00	222
7.25	159
7.50	96
7.75	27
8.00	0
8.25	0
8.50	0
8.75	0
9.00	0
9.25	0
9.50	0
9.75	0
10.00	0
10.25	0
10.50	0
10.75	0
11.00	0
11.25	0
11.50	0
11.75	0
12.00	0
12.25	0
12.50	0
12.75	0
13.00	0
13.25	0
13.50	0
13.75	0
14.00	0
14.25	0
14.50	0
14.75	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 500

t	q	t	q	t	q
0.00	0	6.00	54	12.00	30
0.10	223	6.10	54	12.10	29
0.20	593	6.20	53	12.20	29
0.30	645	6.30	53	12.30	29
0.40	655	6.40	52	12.40	28
0.50	1029	6.50	52	12.50	28
0.60	1428	6.60	51	12.60	28
0.70	1758	6.70	51	12.70	27
0.80	1810	6.80	50	12.80	27
0.90	1597	6.90	50	12.90	27
1.00	1260	7.00	49	13.00	27
1.10	940	7.10	49	13.10	26
1.20	649	7.20	49	13.20	26
1.30	462	7.30	48	13.30	26
1.40	340	7.40	48	13.40	25
1.50	246	7.50	47	13.50	25
1.60	184	7.60	47	13.60	25
1.70	144	7.70	46	13.70	25
1.80	119	7.80	46	13.80	24
1.90	103	7.90	45	13.90	24
2.00	93	8.00	45	14.00	24
2.10	85	8.10	44	14.10	24
2.20	79	8.20	44	14.20	23
2.30	74	8.30	44	14.30	23
2.40	70	8.40	43	14.40	23
2.50	66	8.50	43	14.50	23
2.60	64	8.60	42	14.60	22
2.70	62	8.70	42	14.70	22
2.80	62	8.80	41	14.80	22
2.90	63	8.90	41	14.90	22
3.00	63	9.00	41	15.00	22
3.10	63	9.10	40	15.10	21
3.20	63	9.20	40	15.20	21
3.30	62	9.30	39	15.30	21
3.40	62	9.40	39	15.40	21
3.50	62	9.50	38	15.50	20
3.60	62	9.60	38	15.60	20
3.70	62	9.70	38	15.70	20
3.80	62	9.80	37	15.80	20
3.90	62	9.90	37	15.90	20
4.00	61	10.00	37	16.00	19
4.10	61	10.10	36	16.10	19
4.20	61	10.20	36	16.20	19
4.30	61	10.30	35	16.30	19
4.40	60	10.40	35	16.40	19
4.50	60	10.50	35	16.50	18
4.60	60	10.60	34	16.60	18
4.70	59	10.70	34	16.70	18
4.80	59	10.80	34	16.80	18
4.90	59	10.90	33	16.90	18
5.00	58	11.00	33	17.00	18
5.10	58	11.10	32	17.10	17
5.20	57	11.20	32	17.20	17
5.30	57	11.30	32	17.30	17
5.40	57	11.40	31	17.40	17
5.50	56	11.50	31	17.50	17
5.60	56	11.60	31	17.60	17
5.70	55	11.70	30	17.70	16
5.80	55	11.80	30	17.80	16
5.90	54	11.90	30	17.90	16

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 500

NO PROJECT

t	q
0.00	0
0.10	334
0.20	944
0.30	1358
0.40	1711
0.50	2767
0.60	3497
0.70	3001
0.80	2384
0.90	1916
1.00	1534
1.10	1217
1.20	946
1.30	678
1.40	468
1.50	332
1.60	240
1.70	172
1.80	123
1.90	87
2.00	62
2.10	45
2.20	31
2.30	21
2.40	14
2.50	9
2.60	7
2.70	5
2.80	4
2.90	2
3.00	1
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 501

t	q	t	q	t	q
0.00	0	6.00	56	12.00	31
0.10	166	6.10	55	12.10	30
0.20	533	6.20	55	12.20	30
0.30	1031	6.30	54	12.30	30
0.40	1333	6.40	54	12.40	30
0.50	1660	6.50	54	12.50	29
0.60	2195	6.60	53	12.60	29
0.70	2210	6.70	53	12.70	29
0.80	2194	6.80	52	12.80	28
0.90	2563	6.90	52	12.90	28
1.00	2831	7.00	51	13.00	28
1.10	2913	7.10	51	13.10	27
1.20	2719	7.20	50	13.20	27
1.30	2271	7.30	50	13.30	27
1.40	1713	7.40	49	13.40	27
1.50	1256	7.50	49	13.50	26
1.60	871	7.60	49	13.60	26
1.70	617	7.70	48	13.70	26
1.80	450	7.80	48	13.80	25
1.90	323	7.90	47	13.90	25
2.00	236	8.00	47	14.00	25
2.10	179	8.10	46	14.10	25
2.20	144	8.20	46	14.20	24
2.30	121	8.30	45	14.30	24
2.40	105	8.40	45	14.40	24
2.50	93	8.50	44	14.50	24
2.60	83	8.60	44	14.60	23
2.70	77	8.70	44	14.70	23
2.80	71	8.80	43	14.80	23
2.90	66	8.90	43	14.90	23
3.00	64	9.00	42	15.00	22
3.10	62	9.10	42	15.10	22
3.20	62	9.20	41	15.20	22
3.30	63	9.30	41	15.30	22
3.40	63	9.40	41	15.40	22
3.50	63	9.50	40	15.50	21
3.60	63	9.60	40	15.60	21
3.70	62	9.70	39	15.70	21
3.80	62	9.80	39	15.80	21
3.90	62	9.90	38	15.90	20
4.00	62	10.00	38	16.00	20
4.10	62	10.10	38	16.10	20
4.20	62	10.20	37	16.20	20
4.30	62	10.30	37	16.30	20
4.40	61	10.40	37	16.40	19
4.50	61	10.50	36	16.50	19
4.60	61	10.60	36	16.60	19
4.70	61	10.70	35	16.70	19
4.80	60	10.80	35	16.80	19
4.90	60	10.90	35	16.90	18
5.00	60	11.00	34	17.00	18
5.10	59	11.10	34	17.10	18
5.20	59	11.20	34	17.20	18
5.30	59	11.30	33	17.30	18
5.40	58	11.40	33	17.40	18
5.50	58	11.50	32	17.50	17
5.60	57	11.60	32	17.60	17
5.70	57	11.70	32	17.70	17
5.80	57	11.80	31	17.80	17
5.90	56	11.90	31	17.90	17

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 501

NO PROJECT

t	q
0.00	0
0.10	166
0.20	533
0.30	1031
0.40	1333
0.50	1771
0.60	2546
0.70	2923
0.80	3250
0.90	4301
1.00	4900
1.10	4156
1.20	3293
1.30	2590
1.40	1987
1.50	1533
1.60	1168
1.70	833
1.80	578
1.90	409
2.00	292
2.10	207
2.20	148
2.30	105
2.40	74
2.50	53
2.60	35
2.70	24
2.80	15
2.90	9
3.00	7
3.10	5
3.20	4
3.30	2
3.40	1
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 502

t	q	t	q	t	q
0.00	0	6.00	74	12.00	31
0.10	0	6.10	74	12.10	31
0.20	166	6.20	72	12.20	30
0.30	533	6.30	72	12.30	30
0.40	1031	6.40	71	12.40	30
0.50	1333	6.50	71	12.50	30
0.60	1660	6.60	70	12.60	29
0.70	2195	6.70	69	12.70	29
0.80	2210	6.80	69	12.80	29
0.90	2194	6.90	68	12.90	28
1.00	2563	7.00	68	13.00	28
1.10	2898	7.10	66	13.10	28
1.20	3142	7.20	66	13.20	27
1.30	3167	7.30	65	13.30	27
1.40	2873	7.40	65	13.40	27
1.50	2293	7.50	64	13.50	27
1.60	3449	7.60	63	13.60	26
1.70	3357	7.70	63	13.70	26
1.80	3057	7.80	62	13.80	26
1.90	2767	7.90	62	13.90	25
2.00	2276	8.00	61	14.00	25
2.10	1637	8.10	61	14.10	25
2.20	1079	8.20	59	14.20	25
2.30	719	8.30	59	14.30	24
2.40	504	8.40	58	14.40	24
2.50	359	8.50	58	14.50	24
2.60	263	8.60	57	14.60	24
2.70	199	8.70	57	14.70	23
2.80	156	8.80	57	14.80	23
2.90	126	8.90	55	14.90	23
3.00	113	9.00	55	15.00	23
3.10	106	9.10	54	15.10	22
3.20	99	9.20	54	15.20	22
3.30	96	9.30	53	15.30	22
3.40	94	9.40	53	15.40	22
3.50	93	9.50	53	15.50	22
3.60	91	9.60	51	15.60	21
3.70	90	9.70	51	15.70	21
3.80	88	9.80	50	15.80	21
3.90	86	9.90	50	15.90	21
4.00	86	10.00	49	16.00	20
4.10	85	10.10	49	16.10	20
4.20	85	10.20	49	16.20	20
4.30	85	10.30	48	16.30	20
4.40	84	10.40	47	16.40	20
4.50	83	10.50	47	16.50	19
4.60	83	10.60	46	16.60	19
4.70	82	10.70	46	16.70	19
4.80	82	10.80	45	16.80	19
4.90	81	10.90	45	16.90	19
5.00	81	11.00	45	17.00	18
5.10	80	11.10	44	17.10	18
5.20	79	11.20	44	17.20	18
5.30	79	11.30	43	17.30	18
5.40	78	11.40	42	17.40	18
5.50	77	11.50	42	17.50	18
5.60	77	11.60	41	17.60	17
5.70	76	11.70	41	17.70	17
5.80	75	11.80	41	17.80	17
5.90	75	11.90	40	17.90	17

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 502

NO PROJECT

t	q
0.00	0
0.10	0
0.20	166
0.30	533
0.40	1031
0.50	1333
0.60	1771
0.70	2546
0.80	2923
0.90	3250
1.00	4368
1.10	5222
1.20	4731
1.30	4182
1.40	3884
1.50	3610
1.60	3505
1.70	3389
1.80	2987
1.90	2368
2.00	1696
2.10	1124
2.20	771
2.30	540
2.40	370
2.50	256
2.60	178
2.70	120
2.80	84
2.90	56
3.00	37
3.10	25
3.20	17
3.30	12
3.40	7
3.50	3
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 503

t	q	t	q	t	q
0.00	0	6.00	304	12.00	115
0.10	0	6.10	298	12.10	104
0.20	0	6.20	294	12.20	103
0.30	219	6.30	288	12.30	101
0.40	691	6.40	284	12.40	94
0.50	1355	6.50	279	12.50	93
0.60	2017	6.60	275	12.60	92
0.70	2875	6.70	270	12.70	79
0.80	4019	6.80	266	12.80	78
0.90	4500	6.90	262	12.90	77
1.00	4926	7.00	258	13.00	76
1.10	5624	7.10	255	13.10	75
1.20	6242	7.20	249	13.20	74
1.30	6854	7.30	246	13.30	72
1.40	7356	7.40	241	13.40	72
1.50	7000	7.50	238	13.50	71
1.60	5823	7.60	235	13.60	70
1.70	6335	7.70	230	13.70	68
1.80	5638	7.80	227	13.80	68
1.90	6585	7.90	223	13.90	67
2.00	6333	8.00	221	14.00	65
2.10	5615	8.10	217	14.10	65
2.20	4994	8.20	214	14.20	64
2.30	3970	8.30	210	14.30	64
2.40	2840	8.40	207	14.40	62
2.50	2020	8.50	203	14.50	61
2.60	1472	8.60	201	14.60	61
2.70	1120	8.70	198	14.70	60
2.80	877	8.80	195	14.80	59
2.90	731	8.90	193	14.90	58
3.00	630	9.00	189	15.00	58
3.10	566	9.10	187	15.10	57
3.20	524	9.20	183	15.20	56
3.30	502	9.30	181	15.30	55
3.40	486	9.40	178	15.40	55
3.50	473	9.50	176	15.50	54
3.60	462	9.60	174	15.60	54
3.70	451	9.70	170	15.70	52
3.80	441	9.80	168	15.80	52
3.90	431	9.90	165	15.90	51
4.00	421	10.00	163	16.00	51
4.10	414	10.10	161	16.10	49
4.20	406	10.20	159	16.20	49
4.30	400	10.30	157	16.30	49
4.40	394	10.40	154	16.40	48
4.50	387	10.50	141	16.50	48
4.60	381	10.60	140	16.60	46
4.70	375	10.70	137	16.70	46
4.80	369	10.80	136	16.80	46
4.90	363	10.90	134	16.90	45
5.00	357	11.00	132	17.00	45
5.10	352	11.10	131	17.10	44
5.20	346	11.20	129	17.20	43
5.30	340	11.30	127	17.30	43
5.40	335	11.40	125	17.40	42
5.50	329	11.50	123	17.50	42
5.60	323	11.60	121	17.60	42
5.70	319	11.70	119	17.70	41
5.80	313	11.80	118	17.80	40
5.90	308	11.90	117	17.90	40

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 503

NO PROJECT

t	q
0.00	0
0.10	0
0.20	0
0.30	219
0.40	691
0.50	1558
0.60	2644
0.70	3793
0.80	5171
0.90	6028
1.00	6542
1.10	8060
1.20	9822
1.30	10659
1.40	11825
1.50	13186
1.60	14037
1.70	14217
1.80	13265
1.90	11285
2.00	8912
2.10	6907
2.20	5305
2.30	3961
2.40	2787
2.50	1868
2.60	1279
2.70	891
2.80	610
2.90	423
3.00	289
3.10	197
3.20	135
3.30	92
3.40	60
3.50	36
3.60	21
3.70	13
3.80	8
3.90	4
4.00	1
4.10	1
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 504

t	q	t	q	t	q
0.00	0	6.00	313	12.00	118
0.10	0	6.10	308	12.10	117
0.20	38	6.20	304	12.20	115
0.30	112	6.30	298	12.30	104
0.40	230	6.40	294	12.40	103
0.50	600	6.50	288	12.50	101
0.60	1182	6.60	284	12.60	94
0.70	1884	6.70	279	12.70	93
0.80	2540	6.80	275	12.80	92
0.90	3344	6.90	270	12.90	79
1.00	4419	7.00	266	13.00	78
1.10	4806	7.10	262	13.10	77
1.20	5154	7.20	258	13.20	76
1.30	5798	7.30	255	13.30	75
1.40	6379	7.40	249	13.40	74
1.50	6961	7.50	246	13.50	72
1.60	7437	7.60	241	13.60	72
1.70	7063	7.70	238	13.70	71
1.80	5872	7.80	235	13.80	70
1.90	6373	7.90	230	13.90	68
2.00	5667	8.00	227	14.00	68
2.10	6607	8.10	223	14.10	67
2.20	6350	8.20	221	14.20	65
2.30	5628	8.30	217	14.30	65
2.40	5004	8.40	214	14.40	64
2.50	3978	8.50	210	14.50	64
2.60	2846	8.60	207	14.60	62
2.70	2025	8.70	203	14.70	61
2.80	1476	8.80	201	14.80	61
2.90	1123	8.90	198	14.90	60
3.00	879	9.00	195	15.00	59
3.10	732	9.10	193	15.10	58
3.20	630	9.20	189	15.20	58
3.30	566	9.30	187	15.30	57
3.40	524	9.40	183	15.40	56
3.50	502	9.50	181	15.50	55
3.60	486	9.60	178	15.60	55
3.70	473	9.70	176	15.70	54
3.80	462	9.80	174	15.80	54
3.90	451	9.90	170	15.90	52
4.00	441	10.00	168	16.00	52
4.10	431	10.10	165	16.10	51
4.20	421	10.20	163	16.20	51
4.30	414	10.30	161	16.30	49
4.40	406	10.40	159	16.40	49
4.50	400	10.50	157	16.50	49
4.60	394	10.60	154	16.60	48
4.70	387	10.70	141	16.70	48
4.80	381	10.80	140	16.80	46
4.90	375	10.90	137	16.90	46
5.00	369	11.00	136	17.00	46
5.10	363	11.10	134	17.10	45
5.20	357	11.20	132	17.20	45
5.30	352	11.30	131	17.30	44
5.40	346	11.40	129	17.40	43
5.50	340	11.50	127	17.50	43
5.60	335	11.60	125	17.60	42
5.70	329	11.70	123	17.70	42
5.80	323	11.80	121	17.80	42
5.90	319	11.90	119	17.90	41

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

100-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 504

NO PROJECT

t	q
0.00	0
0.10	0
0.20	38
0.30	112
0.40	230
0.50	600
0.60	1183
0.70	2088
0.80	3167
0.90	4262
1.00	5571
1.10	6334
1.20	6770
1.30	8234
1.40	9959
1.50	10766
1.60	11906
1.70	13250
1.80	14086
1.90	14254
2.00	13294
2.10	11308
2.20	8930
2.30	6921
2.40	5315
2.50	3969
2.60	2793
2.70	1874
2.80	1283
2.90	894
3.00	612
3.10	425
3.20	290
3.30	197
3.40	135
3.50	92
3.60	60
3.70	36
3.80	21
3.90	13
4.00	8
4.10	4
4.20	1
4.30	1
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-1

Frequency in years 2
Drainage area in sq. mi. 0.383
Length in ft. 7600
Elevation, ft. msl:
Top of Basin 1521
Bottom of Basin 1453
Basin Slope in % 0.9
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.76
Precipitation:
Duration in hrs. 0.76
Point Precipitation in inches 0.82
Rainfall intensity in./hr. 1.08
Pervious Area in sq. mi. 0.191
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.192
Curve Number 97
Runoff (Q) in inches 0.51
Time of Peak in hrs. 0.51
Peak Discharge in cfs 185
Runoff Volume in af. 10

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-2

Frequency in years 2
Drainage area in sq. mi. 0.252
Length in ft. 2000
Elevation, ft. msl:
Top of Basin 1453
Bottom of Basin 1437
Basin Slope in % 0.8
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.28
Precipitation:
Duration in hrs. 0.28
Point Precipitation in inches 0.55
Rainfall intensity in./hr. 1.93
Pervious Area in sq. mi. 0.126
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.126
Curve Number 99
Runoff (Q) in inches 0.41
Time of Peak in hrs. 0.19
Peak Discharge in cfs 263
Runoff Volume in af. 5

58TH STREET AND ACOMA DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW CP 301

TOTAL OUTFLOW AT CP 302

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	137	68	6	0	0.52	6
0.20	262	199	8	0	2.10	8
0.30	172	217	10	0	3.81	10
0.40	119	146	12	0	4.92	12
0.50	145	132	13	0	5.90	13
0.60	180	163	15	0	7.12	15
0.70	189	185	17	0	8.50	17
0.80	177	183	20	0	9.85	20
0.90	149	163	22	0	11.02	22
1.00	111	130	24	0	11.90	24
1.10	77	94	25	0	12.47	25
1.20	55	66	25	0	12.80	25
1.30	41	48	26	0	12.99	26
1.40	30	36	26	0	13.07	26
1.50	22	26	26	0	13.07	26
1.60	16	19	26	0	13.01	26
1.70	11	14	26	0	12.91	26
1.80	8	10	25	0	12.79	25
1.90	6	7	25	0	12.64	25
2.00	4	5	25	0	12.48	25
2.10	3	4	24	0	12.31	24
2.20	2	3	24	0	12.13	24
2.30	2	2	24	0	11.95	24
2.40	1	2	23	0	11.77	23
2.50	1	1	23	0	11.59	23
2.60	1	1	23	0	11.41	23
2.70	0	0	22	0	11.23	22
2.80	0	0	22	0	11.05	22
2.90	0	0	22	0	10.87	22
3.00	0	0	21	0	10.69	21
3.10	0	0	21	0	10.52	21
3.20	0	0	21	0	10.35	21
3.30	0	0	20	0	10.18	20
3.40	0	0	20	0	10.01	20
3.50	0	0	20	0	9.85	20
3.60	0	0	20	0	9.69	20
3.70	0	0	19	0	9.53	19
3.80	0	0	19	0	9.37	19
3.90	0	0	19	0	9.22	19
4.00	0	0	18	0	9.06	18
4.10	0	0	18	0	8.91	18
4.20	0	0	18	0	8.76	18
4.30	0	0	18	0	8.62	18
4.40	0	0	17	0	8.47	17
4.50	0	0	17	0	8.33	17
4.60	0	0	17	0	8.19	17
4.70	0	0	17	0	8.05	17
4.80	0	0	16	0	7.92	16
4.90	0	0	16	0	7.78	16
5.00	0	0	16	0	7.65	16
5.10	0	0	16	0	7.52	16
5.20	0	0	16	0	7.39	16
5.30	0	0	15	0	7.26	15
5.40	0	0	15	0	7.14	15
5.50	0	0	15	0	7.01	15
5.60	0	0	15	0	6.89	15
5.70	0	0	15	0	6.77	15
5.80	0	0	14	0	6.65	14
5.90	0	0	14	0	6.54	14

Water Resources Associates, Inc.
Scottsdale, Arizona
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-3

Frequency in years 2
Drainage area in sq. mi. 0.248
Length in ft. 2660
Elevation, ft. msl:
Top of Basin 1430
Bottom of Basin 1415
Basin Slope in % 0.6
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 0.70
Rainfall intensity in./hr. 1.43
Pervious Area in sq. mi. 0.124
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.124
Curve Number 98
Runoff (Q) in inches 0.48
Time of Peak in hrs. 0.33
Peak Discharge in cfs 177
Runoff Volume in af. 6

SERENO PARK DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 303

TOTAL OUTFLOW AT CP 304

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	34	17	5	0	0.10	5
0.20	119	76	6	0	0.68	6
0.30	181	150	7	0	1.86	7
0.40	171	176	9	0	3.24	9
0.50	127	149	11	0	4.38	11
0.60	79	103	12	0	5.13	12
0.70	55	67	13	0	5.58	13
0.80	40	48	13	0	5.86	13
0.90	33	37	13	0	6.06	13
1.00	29	31	14	0	6.20	14
1.10	28	28	14	0	6.32	14
1.20	27	27	14	0	6.43	14
1.30	27	27	14	0	6.54	14
1.40	27	27	14	0	6.64	14
1.50	26	27	15	0	6.74	15
1.60	26	26	15	0	6.84	15
1.70	26	26	15	0	6.93	15
1.80	26	26	15	0	7.02	15
1.90	26	26	15	0	7.10	15
2.00	25	25	15	0	7.19	15
2.10	25	25	15	0	7.27	15
2.20	25	25	16	0	7.34	16
2.30	24	25	16	0	7.42	16
2.40	24	24	16	0	7.49	16
2.50	24	24	16	0	7.55	16
2.60	23	24	16	0	7.62	16
2.70	23	23	16	0	7.67	16
2.80	23	23	16	0	7.73	16
2.90	22	23	16	0	7.78	16
3.00	22	22	16	0	7.83	16
3.10	22	22	16	0	7.87	16
3.20	21	22	16	0	7.92	16
3.30	21	21	17	0	7.95	17
3.40	21	21	17	0	7.99	17
3.50	20	21	17	0	8.02	17
3.60	20	20	17	0	8.05	17
3.70	20	20	17	0	8.08	17
3.80	20	20	17	0	8.10	17
3.90	19	19	17	0	8.12	17
4.00	19	19	17	0	8.14	17
4.10	19	19	17	0	8.16	17
4.20	18	19	17	0	8.17	17
4.30	18	18	17	0	8.18	17
4.40	18	18	17	0	8.19	17
4.50	18	18	17	0	8.20	17
4.60	17	18	17	0	8.21	17
4.70	17	17	17	0	8.21	17
4.80	17	17	17	0	8.21	17
4.90	17	17	17	0	8.21	17
5.00	16	17	17	0	8.20	17
5.10	16	16	17	0	8.20	17
5.20	16	16	17	0	8.19	17
5.30	16	16	17	0	8.18	17
5.40	16	16	17	0	8.17	17
5.50	15	15	17	0	8.16	17
5.60	15	15	17	0	8.15	17
5.70	15	15	17	0	8.14	17
5.80	15	15	17	0	8.12	17
5.90	15	15	17	0	8.10	17

Water Resources, Associates, Inc.
Scottsdale, Arizona
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-4

Frequency in years 2
Drainage area in sq. mi. 0.791
Length in ft. 5280
Elevation, ft. msl:
    Top of Basin 1415
    Bottom of Basin 1386
Basin Slope in % 0.5
Basin Width in ft. 4400
Time of Concentraion in hrs. 0.69
Precipitation:
    Duration in hrs. 0.69
    Point Precipitation in inches 0.70
    Rainfall intensity in./hr. 1.01
Pervious Area in sq. mi. 0.396
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.395
Curve Number 97
Runoff (Q) in inches 0.42
Time of Peak in hrs. 0.46
Peak Discharge in cfs 349
Runoff Volume in af. 18

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-5

Frequency in years 2
Drainage area in sq. mi. 0.499
Length in ft. 5280
Elevation, ft. msl:
Top of Basin 1386
Bottom of Basin 1356
Basin Slope in % 0.6
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.68
Precipitation:
Duration in hrs. 0.68
Point Precipitation in inches 0.79
Rainfall intensity in./hr. 1.16
Pervious Area in sq. mi. 0.250
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.249
Curve Number 97
Runoff (Q) in inches 0.51
Time of Peak in hrs. 0.45
Peak Discharge in cfs 269
Runoff Volume in af. 13

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-7

Frequency in years 2
Drainage area in sq. mi. 0.190
Length in ft. 2640
Elevation, ft. msl:
Top of Basin 1356
Bottom of Basin 1333
Basin Slope in % 0.9
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.34
Precipitation:
Duration in hrs. 0.34
Point Precipitation in inches 0.59
Rainfall intensity in./hr. 1.74
Pervious Area in sq. mi. 0.095
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.095
Curve Number 98
Runoff (Q) in inches 0.43
Time of Peak in hrs. 0.23
Peak Discharge in cfs 174
Runoff Volume in af. 4

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 307

t	q
0.00	0
0.10	64
0.20	169
0.30	181
0.40	178
0.50	268
0.60	365
0.70	435
0.80	439
0.90	384
1.00	300
1.10	225
1.20	157
1.30	113
1.40	85
1.50	63
1.60	49
1.70	38
1.80	31
1.90	26
2.00	23
2.10	21
2.20	19
2.30	18
2.40	17
2.50	16
2.60	16
2.70	16
2.80	16
2.90	16
3.00	16
3.10	16
3.20	16
3.30	16
3.40	16
3.50	16
3.60	16
3.70	16
3.80	17
3.90	17
4.00	17
4.10	17
4.20	17
4.30	17
4.40	17
4.50	17
4.60	17
4.70	17
4.80	17
4.90	17
5.00	17
5.10	17
5.20	17
5.30	17
5.40	17
5.50	17
5.60	17
5.70	17
5.80	17
5.90	17

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
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2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 306

t	q
0.00	0
0.10	16
0.20	51
0.30	104
0.40	136
0.50	138
0.60	120
0.70	91
0.80	60
0.90	42
1.00	30
1.10	21
1.20	15
1.30	10
1.40	7
1.50	5
1.60	4
1.70	3
1.80	2
1.90	1
2.00	1
2.10	1
2.20	0
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-6

Frequency in years 2
Drainage area in sq. mi. 0.447
Length in ft. 5280
Elevation, ft. msl:
Top of Basin 1387
Bottom of Basin 1358
Basin Slope in % 0.5
Basin Width in ft. 2300
Time of Concentraion in hrs. 0.69
Precipitation:
Duration in hrs. 0.69
Point Precipitation in inches 0.76
Rainfall intensity in./hr. 1.10
Pervious Area in sq. mi. 0.224
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.223
Curve Number 97
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.46
Peak Discharge in cfs 223
Runoff Volume in af. 11

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

A-8

Frequency in years 2
Drainage area in sq. mi. 0.568
Length in ft. 5300
Elevation, ft. msl:
Top of Basin 1358
Bottom of Basin 1320
Basin Slope in % 0.7
Basin Width in ft. 3300
Time of Concentraion in hrs. 0.63
Precipitation:
Duration in hrs. 0.63
Point Precipitation in inches 0.76
Rainfall intensity in./hr. 1.22
Pervious Area in sq. mi. 0.284
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.284
Curve Number 97
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.42
Peak Discharge in cfs 328
Runoff Volume in af. 15

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 308

t	q
0.00	0
0.10	44
0.20	142
0.30	274
0.40	352
0.50	389
0.60	412
0.70	395
0.80	380
0.90	370
1.00	332
1.10	269
1.20	210
1.30	155
1.40	104
1.50	73
1.60	52
1.70	36
1.80	25
1.90	18
2.00	12
2.10	8
2.20	6
2.30	4
2.40	3
2.50	2
2.60	1
2.70	1
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-3

Frequency in years 2
Drainage area in sq. mi. 0.119
Length in ft. 4500
Elevation, ft. msl:
Top of Basin 1518
Bottom of Basin 1473
Basin Slope in % 1.0
Basin Width in ft. 800
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 0.68
Rainfall intensity in./hr. 1.41
Pervious Area in sq. mi. 0.059
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.060
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.32
Peak Discharge in cfs 84
Runoff Volume in af. 3

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-3a

Frequency in years 2
Drainage area in sq. mi. 0.060
Length in ft. 2800
Elevation, ft. msl:
Top of Basin 1473
Bottom of Basin 1450
Basin Slope in % 0.8
Basin Width in ft. 550
Time of Concentraion in hrs. 0.36
Precipitation:
Duration in hrs. 0.36
Point Precipitation in inches 0.62
Rainfall intensity in./hr. 1.69
Pervious Area in sq. mi. 0.030
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.030
Curve Number 98
Runoff (Q) in inches 0.45
Time of Peak in hrs. 0.24
Peak Discharge in cfs 53
Runoff Volume in af. 1

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-4

Frequency in years 2
Drainage area in sq. mi. 0.544
Length in ft. 7950
Elevation, ft. msl:
Top of Basin 1518
Bottom of Basin 1446
Basin Slope in % 0.9
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.78
Precipitation:
Duration in hrs. 0.78
Point Precipitation in inches 0.83
Rainfall intensity in./hr. 1.06
Pervious Area in sq. mi. 0.272
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.272
Curve Number 96
Runoff (Q) in inches 0.51
Time of Peak in hrs. 0.52
Peak Discharge in cfs 258
Runoff Volume in af. 15

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-5

Frequency in years 2
Drainage area in sq. mi. 0.148
Length in ft. 1800
Elevation, ft. msl:
    Top of Basin 1450
    Bottom of Basin 1440
Basin Slope in % 0.6
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.30
Precipitation:
    Duration in hrs. 0.30
    Point Precipitation in inches 0.56
    Rainfall intensity in./hr. 1.87
Pervious Area in sq. mi. 0.074
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.074
Curve Number 99
Runoff (Q) in inches 0.42
Time of Peak in hrs. 0.20
Peak Discharge in cfs 149
Runoff Volume in af. 3

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 201

t	q
0.00	0
0.10	70
0.20	173
0.30	195
0.40	251
0.50	298
0.60	309
0.70	323
0.80	304
0.90	243
1.00	166
1.10	112
1.20	80
1.30	56
1.40	39
1.50	28
1.60	20
1.70	14
1.80	10
1.90	7
2.00	5
2.10	4
2.20	3
2.30	2
2.40	2
2.50	1
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-1

Frequency in years 2
Drainage area in sq. mi. 0.152
Length in ft. 2500
Elevation, ft. msl:
    Top of Basin 1516
    Bottom of Basin 1492
Basin Slope in % 1.0
Basin Width in ft. 1850
Time of Concentraion in hrs. 0.31
Precipitation:
    Duration in hrs. 0.31
    Point Precipitation in inches 0.50
    Rainfall intensity in./hr. 1.58
Pervious Area in sq. mi. 0.076
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.076
Curve Number 99
Runoff (Q) in inches 0.35
Time of Peak in hrs. 0.21
Peak Discharge in cfs 124
Runoff Volume in af. 3

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-2

Frequency in years 2
Drainage area in sq. mi. 0.289
Length in ft. 4300
Elevation, ft. msl:
Top of Basin 1517
Bottom of Basin 1475
Basin Slope in % 1.0
Basin Width in ft. 2500
Time of Concentraion in hrs. 0.47
Precipitation:
Duration in hrs. 0.47
Point Precipitation in inches 0.68
Rainfall intensity in./hr. 1.45
Pervious Area in sq. mi. 0.144
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.145
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.32
Peak Discharge in cfs 210
Runoff Volume in af. 7

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-6

Frequency in years 2
Drainage area in sq. mi. 1.508
Length in ft. 4600
Elevation, ft. msl:
Top of Basin 1475
Bottom of Basin 1434
Basin Slope in % 0.9
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.68
Precipitation:
Duration in hrs. 0.68
Point Precipitation in inches 0.79
Rainfall intensity in./hr. 1.16
Pervious Area in sq. mi. 0.754
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.754
Curve Number 97
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.45
Peak Discharge in cfs 812
Runoff Volume in af. 40

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-7

Frequency in years 2
Drainage area in sq. mi. 0.239
Length in ft. 3550
Elevation, ft. msl:
Top of Basin 1495
Bottom of Basin 1461
Basin Slope in % 1.0
Basin Width in ft. 1800
Time of Concentraion in hrs. 0.41
Precipitation:
Duration in hrs. 0.41
Point Precipitation in inches 0.63
Rainfall intensity in./hr. 1.54
Pervious Area in sq. mi. 0.119
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.119
Curve Number 98
Runoff (Q) in inches 0.44
Time of Peak in hrs. 0.27
Peak Discharge in cfs 187
Runoff Volume in af. 6

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-8

Frequency in years 2
Drainage area in sq. mi. 0.254
Length in ft. 3860
Elevation, ft. msl:
Top of Basin 1468
Bottom of Basin 1444
Basin Slope in % 0.6
Basin Width in ft. 2000
Time of Concentraion in hrs. 0.52
Precipitation:
Duration in hrs. 0.52
Point Precipitation in inches 0.70
Rainfall intensity in./hr. 1.35
Pervious Area in sq. mi. 0.127
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.127
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.34
Peak Discharge in cfs 168
Runoff Volume in af. 6

68TH STREET AND HEARN DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 203

TOTAL OUTFLOW AT CP 202

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	97	49	3	0	0.38	3
0.20	341	219	4	0	2.18	4
0.30	730	535	5	0	6.60	5
0.40	963	846	6	0	13.58	6
0.50	1009	986	8	0	21.66	8
0.60	1001	1005	17	0	29.82	17
0.70	952	976	28	0	37.66	28
0.80	835	894	40	0	44.72	40
0.90	603	719	50	0	50.25	50
1.00	385	494	54	145	52.68	199
1.10	234	309	54	255	52.68	309
1.20	149	192	54	138	52.68	192
1.30	95	122	54	69	52.68	122
1.40	61	78	54	24	52.68	78
1.50	41	51	54	0	52.66	54
1.60	27	34	54	0	52.49	54
1.70	17	22	54	0	52.22	54
1.80	11	14	53	0	51.90	53
1.90	8	10	53	0	51.54	53
2.00	5	7	52	0	51.17	52
2.10	3	4	51	0	50.78	51
2.20	1	2	50	0	50.38	50
2.30	0	0	49	0	49.98	49
2.40	0	0	49	0	49.57	49
2.50	0	0	48	0	49.18	48
2.60	0	0	47	0	48.79	47
2.70	0	0	46	0	48.40	46
2.80	0	0	46	0	48.03	46
2.90	0	0	45	0	47.65	45
3.00	0	0	44	0	47.29	44
3.10	0	0	44	0	46.92	44
3.20	0	0	43	0	46.57	43
3.30	0	0	42	0	46.22	42
3.40	0	0	42	0	45.87	42
3.50	0	0	41	0	45.53	41
3.60	0	0	41	0	45.20	41
3.70	0	0	40	0	44.86	40
3.80	0	0	39	0	44.54	39
3.90	0	0	39	0	44.22	39
4.00	0	0	38	0	43.90	38
4.10	0	0	38	0	43.59	38
4.20	0	0	37	0	43.28	37
4.30	0	0	37	0	42.98	37
4.40	0	0	36	0	42.68	36
4.50	0	0	36	0	42.38	36
4.60	0	0	35	0	42.09	35
4.70	0	0	35	0	41.80	35
4.80	0	0	34	0	41.52	34
4.90	0	0	34	0	41.24	34
5.00	0	0	33	0	40.96	33
5.10	0	0	33	0	40.69	33
5.20	0	0	32	0	40.42	32
5.30	0	0	32	0	40.16	32
5.40	0	0	32	0	39.90	32
5.50	0	0	31	0	39.64	31
5.60	0	0	31	0	39.39	31
5.70	0	0	30	0	39.13	30
5.80	0	0	30	0	38.89	30
5.90	0	0	30	0	38.64	30

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

68TH STREET AND HEARN DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 203

TOTAL OUTFLOW AT CP 202

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	29	0	38.40	29
6.10	0	0	29	0	38.16	29
6.20	0	0	29	0	37.93	29
6.30	0	0	28	0	37.69	28
6.40	0	0	28	0	37.46	28
6.50	0	0	27	0	37.24	27
6.60	0	0	27	0	37.01	27
6.70	0	0	27	0	36.79	27
6.80	0	0	26	0	36.57	26
6.90	0	0	26	0	36.36	26
7.00	0	0	26	0	36.14	26
7.10	0	0	25	0	35.93	25
7.20	0	0	25	0	35.73	25
7.30	0	0	25	0	35.52	25
7.40	0	0	25	0	35.32	25
7.50	0	0	24	0	35.12	24
7.60	0	0	24	0	34.92	24
7.70	0	0	24	0	34.72	24
7.80	0	0	23	0	34.53	23
7.90	0	0	23	0	34.34	23
8.00	0	0	23	0	34.15	23
8.10	0	0	23	0	33.96	23
8.20	0	0	22	0	33.78	22
8.30	0	0	22	0	33.59	22
8.40	0	0	22	0	33.41	22
8.50	0	0	22	0	33.23	22
8.60	0	0	21	0	33.06	21
8.70	0	0	21	0	32.88	21
8.80	0	0	21	0	32.71	21
8.90	0	0	21	0	32.54	21
9.00	0	0	20	0	32.37	20
9.10	0	0	20	0	32.20	20
9.20	0	0	20	0	32.04	20
9.30	0	0	20	0	31.88	20
9.40	0	0	20	0	31.71	20
9.50	0	0	19	0	31.55	19
9.60	0	0	19	0	31.40	19
9.70	0	0	19	0	31.24	19
9.80	0	0	19	0	31.09	19
9.90	0	0	19	0	30.93	19
10.00	0	0	18	0	30.78	18
10.10	0	0	18	0	30.63	18
10.20	0	0	18	0	30.48	18
10.30	0	0	18	0	30.34	18
10.40	0	0	18	0	30.19	18
10.50	0	0	17	0	30.05	17
10.60	0	0	17	0	29.91	17
10.70	0	0	17	0	29.77	17
10.80	0	0	17	0	29.63	17
10.90	0	0	17	0	29.49	17
11.00	0	0	16	0	29.35	16
11.10	0	0	16	0	29.22	16
11.20	0	0	16	0	29.08	16
11.30	0	0	16	0	28.95	16
11.40	0	0	16	0	28.82	16
11.50	0	0	16	0	28.69	16
11.60	0	0	16	0	28.56	16
11.70	0	0	15	0	28.44	15
11.80	0	0	15	0	28.31	15
11.90	0	0	15	0	28.19	15

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-10

Frequency in years 2
Drainage area in sq. mi. 0.157
Length in ft. 2760
Elevation, ft. msl:
Top of Basin 1437
Bottom of Basin 1420
Basin Slope in % 0.6
Basin Width in ft. 1645
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 0.84
Rainfall intensity in./hr. 1.71
Pervious Area in sq. mi. 0.079
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.078
Curve Number 98
Runoff (Q) in inches 0.61
Time of Peak in hrs. 0.33
Peak Discharge in cfs 142
Runoff Volume in af. 5

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-11

Frequency in years 2
Drainage area in sq. mi. 0.095
Length in ft. 2680
Elevation, ft. msl:
Top of Basin 1434
Bottom of Basin 1417
Basin Slope in % 0.6
Basin Width in ft. 965
Time of Concentraion in hrs. 0.47
Precipitation:
Duration in hrs. 0.47
Point Precipitation in inches 0.69
Rainfall intensity in./hr. 1.47
Pervious Area in sq. mi. 0.048
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.047
Curve Number 98
Runoff (Q) in inches 0.48
Time of Peak in hrs. 0.31
Peak Discharge in cfs 70
Runoff Volume in af. 2

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 204

t	q	t	q
0.00	0	6.00	31
0.10	0	6.10	30
0.20	0	6.20	30
0.30	0	6.30	30
0.40	43	6.40	29
0.50	149	6.50	29
0.60	285	6.60	29
0.70	370	6.70	28
0.80	333	6.80	28
0.90	335	6.90	27
1.00	361	7.00	27
1.10	365	7.10	27
1.20	380	7.20	26
1.30	364	7.30	26
1.40	448	7.40	26
1.50	479	7.50	25
1.60	306	7.60	25
1.70	204	7.70	25
1.80	135	7.80	25
1.90	93	7.90	24
2.00	82	8.00	24
2.10	74	8.10	24
2.20	67	8.20	23
2.30	63	8.30	23
2.40	59	8.40	23
2.50	56	8.50	23
2.60	54	8.60	22
2.70	52	8.70	22
2.80	51	8.80	22
2.90	49	8.90	22
3.00	48	9.00	21
3.10	47	9.10	21
3.20	46	9.20	21
3.30	45	9.30	21
3.40	44	9.40	20
3.50	44	9.50	20
3.60	43	9.60	20
3.70	42	9.70	20
3.80	42	9.80	20
3.90	41	9.90	19
4.00	41	10.00	19
4.10	40	10.10	19
4.20	39	10.20	19
4.30	39	10.30	19
4.40	38	10.40	18
4.50	38	10.50	18
4.60	37	10.60	18
4.70	37	10.70	18
4.80	36	10.80	18
4.90	36	10.90	17
5.00	35	11.00	17
5.10	35	11.10	17
5.20	34	11.20	17
5.30	34	11.30	17
5.40	33	11.40	16
5.50	33	11.50	16
5.60	32	11.60	16
5.70	32	11.70	16
5.80	32	11.80	16
5.90	31	11.90	16

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-9

Frequency in years 2
Drainage area in sq. mi. 0.125
Length in ft. 1400
Elevation, ft. msl:
Top of Basin 1432
Bottom of Basin 1423
Basin Slope in % 0.6
Basin Width in ft. 2600
Time of Concentraion in hrs. 0.24
Precipitation:
Duration in hrs. 0.24
Point Precipitation in inches 0.50
Rainfall intensity in./hr. 2.04
Pervious Area in sq. mi. 0.063
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.062
Curve Number 99
Runoff (Q) in inches 0.37
Time of Peak in hrs. 0.16
Peak Discharge in cfs 140
Runoff Volume in af. 2

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-12

Frequency in years 2
Drainage area in sq. mi. 0.716
Length in ft. 5400
Elevation, ft. msl:
Top of Basin 1422
Bottom of Basin 1387
Basin Slope in % 0.6
Basin Width in ft. 3800
Time of Concentraion in hrs. 0.66
Precipitation:
Duration in hrs. 0.66
Point Precipitation in inches 0.78
Rainfall intensity in./hr. 1.18
Pervious Area in sq. mi. 0.358
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.358
Curve Number 97
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.44
Peak Discharge in cfs 395
Runoff Volume in af. 19

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 205

t	q
0.00	0
0.10	49
0.20	157
0.30	312
0.40	489
0.50	508
0.60	368
0.70	243
0.80	156
0.90	106
1.00	74
1.10	50
1.20	35
1.30	24
1.40	16
1.50	11
1.60	8
1.70	5
1.80	4
1.90	3
2.00	2
2.10	1
2.20	0
2.30	0
2.40	0
2.50	0
2.60	0
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-13

Frequency in years 2
Drainage area in sq. mi. 0.502
Length in ft. 5350
Elevation, ft. msl:
Top of Basin 1387
Bottom of Basin 1356
Basin Slope in % 0.6
Basin Width in ft. 2700
Time of Concentraion in hrs. 0.68
Precipitation:
Duration in hrs. 0.68
Point Precipitation in inches 0.79
Rainfall intensity in./hr. 1.16
Pervious Area in sq. mi. 0.251
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.251
Curve Number 97
Runoff (Q) in inches 0.51
Time of Peak in hrs. 0.46
Peak Discharge in cfs 270
Runoff Volume in af. 14

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-14

Frequency in years 2
Drainage area in sq. mi. 0.240
Length in ft. 2650
Elevation, ft. msl:
Top of Basin 1353
Bottom of Basin 1338
Basin Slope in % 0.6
Basin Width in ft. 2500
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 0.69
Rainfall intensity in./hr. 1.41
Pervious Area in sq. mi. 0.120
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.120
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.33
Peak Discharge in cfs 168
Runoff Volume in af. 6

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 208

t	q
0.00	0
0.10	33
0.20	113
0.30	198
0.40	254
0.50	312
0.60	375
0.70	464
0.80	568
0.90	681
1.00	633
1.10	455
1.20	305
1.30	199
1.40	136
1.50	95
1.60	64
1.70	45
1.80	31
1.90	21
2.00	15
2.10	10
2.20	7
2.30	5
2.40	3
2.50	2
2.60	1
2.70	0
2.80	0
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 206

t	q	t	q
0.00	0	6.00	33
0.10	0	6.10	32
0.20	0	6.20	32
0.30	0	6.30	32
0.40	0	6.40	31
0.50	0	6.50	31
0.60	0	6.60	30
0.70	0	6.70	30
0.80	0	6.80	30
0.90	43	6.90	29
1.00	149	7.00	29
1.10	285	7.10	29
1.20	370	7.20	28
1.30	333	7.30	28
1.40	335	7.40	27
1.50	361	7.50	27
1.60	365	7.60	27
1.70	380	7.70	26
1.80	364	7.80	26
1.90	448	7.90	26
2.00	479	8.00	25
2.10	306	8.10	25
2.20	204	8.20	25
2.30	135	8.30	25
2.40	93	8.40	24
2.50	82	8.50	24
2.60	74	8.60	24
2.70	67	8.70	23
2.80	63	8.80	23
2.90	59	8.90	23
3.00	56	9.00	23
3.10	54	9.10	22
3.20	52	9.20	22
3.30	51	9.30	22
3.40	49	9.40	22
3.50	48	9.50	21
3.60	47	9.60	21
3.70	46	9.70	21
3.80	45	9.80	21
3.90	44	9.90	20
4.00	44	10.00	20
4.10	43	10.10	20
4.20	42	10.20	20
4.30	42	10.30	20
4.40	41	10.40	19
4.50	41	10.50	19
4.60	40	10.60	19
4.70	39	10.70	19
4.80	39	10.80	19
4.90	38	10.90	18
5.00	38	11.00	18
5.10	37	11.10	18
5.20	37	11.20	18
5.30	36	11.30	18
5.40	36	11.40	17
5.50	35	11.50	17
5.60	35	11.60	17
5.70	34	11.70	17
5.80	34	11.80	17
5.90	33	11.90	16

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
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2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 207

t	q	t	q
0.00	0	6.00	16
0.10	0	6.10	16
0.20	0	6.20	16
0.30	0	6.30	16
0.40	0	6.40	16
0.50	0	6.50	15
0.60	0	6.60	15
0.70	0	6.70	15
0.80	0	6.80	15
0.90	21	6.90	15
1.00	75	7.00	14
1.10	142	7.10	14
1.20	185	7.20	14
1.30	166	7.30	14
1.40	167	7.40	14
1.50	181	7.50	14
1.60	182	7.60	13
1.70	190	7.70	13
1.80	182	7.80	13
1.90	224	7.90	13
2.00	239	8.00	13
2.10	153	8.10	13
2.20	102	8.20	12
2.30	68	8.30	12
2.40	47	8.40	12
2.50	41	8.50	12
2.60	37	8.60	12
2.70	34	8.70	12
2.80	31	8.80	12
2.90	30	8.90	11
3.00	28	9.00	11
3.10	27	9.10	11
3.20	26	9.20	11
3.30	25	9.30	11
3.40	25	9.40	11
3.50	24	9.50	11
3.60	23	9.60	11
3.70	23	9.70	10
3.80	23	9.80	10
3.90	22	9.90	10
4.00	22	10.00	10
4.10	22	10.10	10
4.20	21	10.20	10
4.30	21	10.30	10
4.40	21	10.40	10
4.50	20	10.50	10
4.60	20	10.60	9
4.70	20	10.70	9
4.80	19	10.80	9
4.90	19	10.90	9
5.00	19	11.00	9
5.10	19	11.10	9
5.20	18	11.20	9
5.30	18	11.30	9
5.40	18	11.40	9
5.50	18	11.50	9
5.60	17	11.60	9
5.70	17	11.70	8
5.80	17	11.80	8
5.90	17	11.90	8

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 209

t	q	t	q
0.00	0	6.00	17
0.10	0	6.10	17
0.20	0	6.20	16
0.30	0	6.30	16
0.40	0	6.40	16
0.50	0	6.50	16
0.60	0	6.60	16
0.70	0	6.70	15
0.80	0	6.80	15
0.90	0	6.90	15
1.00	0	7.00	15
1.10	21	7.10	15
1.20	75	7.20	14
1.30	142	7.30	14
1.40	185	7.40	14
1.50	166	7.50	14
1.60	167	7.60	14
1.70	181	7.70	14
1.80	182	7.80	13
1.90	190	7.90	13
2.00	182	8.00	13
2.10	224	8.10	13
2.20	239	8.20	13
2.30	153	8.30	13
2.40	102	8.40	12
2.50	68	8.50	12
2.60	47	8.60	12
2.70	41	8.70	12
2.80	37	8.80	12
2.90	34	8.90	12
3.00	31	9.00	12
3.10	30	9.10	11
3.20	28	9.20	11
3.30	27	9.30	11
3.40	26	9.40	11
3.50	25	9.50	11
3.60	25	9.60	11
3.70	24	9.70	11
3.80	23	9.80	11
3.90	23	9.90	10
4.00	23	10.00	10
4.10	22	10.10	10
4.20	22	10.20	10
4.30	22	10.30	10
4.40	21	10.40	10
4.50	21	10.50	10
4.60	21	10.60	10
4.70	20	10.70	10
4.80	20	10.80	9
4.90	20	10.90	9
5.00	19	11.00	9
5.10	19	11.10	9
5.20	19	11.20	9
5.30	19	11.30	9
5.40	18	11.40	9
5.50	18	11.50	9
5.60	18	11.60	9
5.70	18	11.70	9
5.80	17	11.80	9
5.90	17	11.90	8

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-5

Frequency in years 2
Drainage area in sq. mi. 0.166
Length in ft. 3000
Elevation, ft. msl:
Top of Basin 1445
Bottom of Basin 1423
Basin Slope in % 0.7
Basin Width in ft. 1800
Time of Concentraion in hrs. 0.49
Precipitation:
Duration in hrs. 0.49
Point Precipitation in inches 0.70
Rainfall intensity in./hr. 1.43
Pervious Area in sq. mi. 0.083
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.083
Curve Number 98
Runoff (Q) in inches 0.48
Time of Peak in hrs. 0.32
Peak Discharge in cfs 119
Runoff Volume in af. 4

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-6

Frequency in years 2
Drainage area in sq. mi. 0.194
Length in ft. 5400
Elevation, ft. msl:
Top of Basin 1423
Bottom of Basin 1386
Basin Slope in % 0.7
Basin Width in ft. 1025
Time of Concentraion in hrs. 0.91
Precipitation:
Duration in hrs. 0.91
Point Precipitation in inches 0.87
Rainfall intensity in./hr. 0.96
Pervious Area in sq. mi. 0.097
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.097
Curve Number 96
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.60
Peak Discharge in cfs 78
Runoff Volume in af. 5

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-13

Frequency in years 2
Drainage area in sq. mi. 0.138
Length in ft. 3400
Elevation, ft. msl:
Top of Basin 1386
Bottom of Basin 1365
Basin Slope in % 0.6
Basin Width in ft. 1150
Time of Concentraion in hrs. 0.60
Precipitation:
Duration in hrs. 0.60
Point Precipitation in inches 0.76
Rainfall intensity in./hr. 1.27
Pervious Area in sq. mi. 0.069
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.069
Curve Number 97
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.40
Peak Discharge in cfs 84
Runoff Volume in af. 4

GARY ROAD DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 106

TOTAL OUTFLOW AT CP 107

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	12	6	2	0	0.03	2
0.20	39	26	3	0	0.22	3
0.30	79	59	3	0	0.69	3
0.40	102	91	4	0	1.40	4
0.50	112	107	5	0	2.24	5
0.60	117	114	7	0	3.13	7
0.70	134	126	9	0	4.10	9
0.80	185	160	11	0	5.32	11
0.90	208	197	14	0	6.83	14
1.00	182	195	18	0	8.29	18
1.10	132	157	21	0	9.42	21
1.20	84	108	22	0	10.13	22
1.30	57	71	23	0	10.52	23
1.40	39	48	24	0	10.72	24
1.50	27	33	24	0	10.80	24
1.60	19	23	24	0	10.79	24
1.70	14	17	24	0	10.73	24
1.80	10	12	24	0	10.63	24
1.90	7	9	23	0	10.51	23
2.00	5	6	23	0	10.37	23
2.10	4	4	23	0	10.22	23
2.20	3	3	22	0	10.06	22
2.30	2	2	22	0	9.90	22
2.40	1	2	21	0	9.74	21
2.50	1	1	21	0	9.57	21
2.60	1	1	21	0	9.41	21
2.70	1	1	20	0	9.25	20
2.80	1	1	20	0	9.09	20
2.90	0	0	19	0	8.94	19
3.00	0	0	19	0	8.78	19
3.10	0	0	19	0	8.63	19
3.20	0	0	18	0	8.48	18
3.30	0	0	18	0	8.33	18
3.40	0	0	18	0	8.18	18
3.50	0	0	17	0	8.04	17
3.60	0	0	17	0	7.90	17
3.70	0	0	17	0	7.77	17
3.80	0	0	16	0	7.63	16
3.90	0	0	16	0	7.50	16
4.00	0	0	16	0	7.37	16
4.10	0	0	15	0	7.24	15
4.20	0	0	15	0	7.12	15
4.30	0	0	15	0	7.00	15
4.40	0	0	15	0	6.88	15
4.50	0	0	14	0	6.76	14
4.60	0	0	14	0	6.64	14
4.70	0	0	14	0	6.53	14
4.80	0	0	14	0	6.42	14
4.90	0	0	13	0	6.31	13
5.00	0	0	13	0	6.20	13
5.10	0	0	13	0	6.09	13
5.20	0	0	13	0	5.99	13
5.30	0	0	12	0	5.89	12
5.40	0	0	12	0	5.79	12
5.50	0	0	12	0	5.69	12
5.60	0	0	12	0	5.59	12
5.70	0	0	12	0	5.49	12
5.80	0	0	11	0	5.40	11
5.90	0	0	11	0	5.31	11

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

GARY ROAD DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 106

TOTAL OUTFLOW AT CP 107

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	11	0	5.22	11
6.10	0	0	11	0	5.13	11
6.20	0	0	11	0	5.04	11
6.30	0	0	10	0	4.95	10
6.40	0	0	10	0	4.87	10
6.50	0	0	10	0	4.79	10
6.60	0	0	10	0	4.70	10
6.70	0	0	10	0	4.62	10
6.80	0	0	10	0	4.54	10
6.90	0	0	9	0	4.47	9
7.00	0	0	9	0	4.39	9
7.10	0	0	9	0	4.31	9
7.20	0	0	9	0	4.24	9
7.30	0	0	9	0	4.16	9
7.40	0	0	9	0	4.09	9
7.50	0	0	9	0	4.02	9
7.60	0	0	8	0	3.95	8
7.70	0	0	8	0	3.88	8
7.80	0	0	8	0	3.81	8
7.90	0	0	8	0	3.75	8
8.00	0	0	8	0	3.68	8
8.10	0	0	8	0	3.62	8
8.20	0	0	8	0	3.55	8
8.30	0	0	8	0	3.49	8
8.40	0	0	8	0	3.43	8
8.50	0	0	7	0	3.37	7
8.60	0	0	7	0	3.31	7
8.70	0	0	7	0	3.25	7
8.80	0	0	7	0	3.19	7
8.90	0	0	7	0	3.13	7
9.00	0	0	7	0	3.07	7
9.10	0	0	7	0	3.02	7
9.20	0	0	7	0	2.96	7
9.30	0	0	7	0	2.91	7
9.40	0	0	7	0	2.85	7
9.50	0	0	6	0	2.80	6
9.60	0	0	6	0	2.75	6
9.70	0	0	6	0	2.70	6
9.80	0	0	6	0	2.65	6
9.90	0	0	6	0	2.60	6
10.00	0	0	6	0	2.55	6

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-4

Frequency in years 2
Drainage area in sq. mi. 0.084
Length in ft. 2600
Elevation, ft. msl:
Top of Basin 1448
Bottom of Basin 1423
Basin Slope in % 1.0
Basin Width in ft. 1000
Time of Concentraion in hrs. 0.37
Precipitation:
Duration in hrs. 0.37
Point Precipitation in inches 0.65
Rainfall intensity in./hr. 1.76
Pervious Area in sq. mi. 0.042
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.042
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.25
Peak Discharge in cfs 78
Runoff Volume in af. 2

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-7

Frequency in years 2
Drainage area in sq. mi. 0.306
Length in ft. 5600
Elevation, ft. msl:
Top of Basin 1423
Bottom of Basin 1386
Basin Slope in % 0.7
Basin Width in ft. 1650
Time of Concentraion in hrs. 0.96
Precipitation:
Duration in hrs. 0.96
Point Precipitation in inches 0.88
Rainfall intensity in./hr. 0.92
Pervious Area in sq. mi. 0.153
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.153
Curve Number 96
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.64
Peak Discharge in cfs 115
Runoff Volume in af. 8

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-11

Frequency in years 2
Drainage area in sq. mi. 0.090
Length in ft. 3400
Elevation, ft. msl:
Top of Basin 1381
Bottom of Basin 1365
Basin Slope in % 0.5
Basin Width in ft. 800
Time of Concentraion in hrs. 0.69
Precipitation:
Duration in hrs. 0.69
Point Precipitation in inches 0.81
Rainfall intensity in./hr. 1.17
Pervious Area in sq. mi. 0.045
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.045
Curve Number 97
Runoff (Q) in inches 0.52
Time of Peak in hrs. 0.46
Peak Discharge in cfs 49
Runoff Volume in af. 2

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-12

Frequency in years 2
Drainage area in sq. mi. 0.205
Length in ft. 3500
Elevation, ft. msl:
    Top of Basin 1386
    Bottom of Basin 1365
Basin Slope in % 0.6
Basin Width in ft. 1700
Time of Concentraion in hrs. 0.63
Precipitation:
    Duration in hrs. 0.63
    Point Precipitation in inches 0.85
    Rainfall intensity in./hr. 1.35
Pervious Area in sq. mi. 0.103
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.102
Curve Number 97
Runoff (Q) in inches 0.57
Time of Peak in hrs. 0.42
Peak Discharge in cfs 135
Runoff Volume in af. 6

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 108

t	q	t	q
0.00	0	6.00	50
0.10	20	6.10	50
0.20	67	6.20	49
0.30	147	6.30	49
0.40	204	6.40	48
0.50	235	6.50	48
0.60	247	6.60	47
0.70	258	6.70	47
0.80	289	6.80	46
0.90	271	6.90	46
1.00	221	7.00	45
1.10	181	7.10	45
1.20	149	7.20	44
1.30	125	7.30	44
1.40	110	7.40	43
1.50	99	7.50	43
1.60	92	7.60	42
1.70	86	7.70	42
1.80	82	7.80	41
1.90	78	7.90	41
2.00	76	8.00	40
2.10	74	8.10	40
2.20	72	8.20	39
2.30	71	8.30	39
2.40	70	8.40	38
2.50	69	8.50	38
2.60	68	8.60	38
2.70	68	8.70	37
2.80	67	8.80	37
2.90	67	8.90	36
3.00	66	9.00	36
3.10	66	9.10	35
3.20	65	9.20	35
3.30	65	9.30	35
3.40	64	9.40	34
3.50	64	9.50	34
3.60	63	9.60	33
3.70	63	9.70	33
3.80	62	9.80	32
3.90	62	9.90	32
4.00	61	10.00	26
4.10	61	10.10	25
4.20	60	10.20	25
4.30	60	10.30	24
4.40	59	10.40	24
4.50	59	10.50	24
4.60	58	10.60	23
4.70	58	10.70	23
4.80	57	10.80	23
4.90	56	10.90	23
5.00	56	11.00	22
5.10	55	11.10	22
5.20	55	11.20	22
5.30	54	11.30	21
5.40	54	11.40	21
5.50	53	11.50	21
5.60	53	11.60	21
5.70	52	11.70	20
5.80	51	11.80	20
5.90	51	11.90	20

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-1

Frequency in years 2
Drainage area in sq. mi. 0.402
Length in ft. 3800
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1475
Basin Slope in % 0.9
Basin Width in ft. 3000
Time of Concentraion in hrs. 0.44
Precipitation:
Duration in hrs. 0.44
Point Precipitation in inches 0.66
Rainfall intensity in./hr. 1.50
Pervious Area in sq. mi. 0.201
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.201
Curve Number 98
Runoff (Q) in inches 0.46
Time of Peak in hrs. 0.29
Peak Discharge in cfs 306
Runoff Volume in af. 10

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-7

Frequency in years 2
Drainage area in sq. mi. 0.146
Length in ft. 3750
Elevation, ft. msl:
Top of Basin 1420
Bottom of Basin 1390
Basin Slope in % 0.8
Basin Width in ft. 1100
Time of Concentraion in hrs. 0.46
Precipitation:
Duration in hrs. 0.46
Point Precipitation in inches 0.68
Rainfall intensity in./hr. 1.48
Pervious Area in sq. mi. 0.073
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.073
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.31
Peak Discharge in cfs 109
Runoff Volume in af. 4

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-8

Frequency in years 2
Drainage area in sq. mi. 1.237
Length in ft. 8800
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1428
Basin Slope in % 0.9
Basin Width in ft. 3600
Time of Concentraion in hrs. 0.84
Precipitation:
Duration in hrs. 0.84
Point Precipitation in inches 0.84
Rainfall intensity in./hr. 1.00
Pervious Area in sq. mi. 0.619
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.618
Curve Number 96
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.56
Peak Discharge in cfs 534
Runoff Volume in af. 33

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-9

Frequency in years 2
Drainage area in sq. mi. 0.244
Length in ft. 4600
Elevation, ft. msl:
Top of Basin 1428
Bottom of Basin 1396
Basin Slope in % 0.7
Basin Width in ft. 1800
Time of Concentraion in hrs. 0.57
Precipitation:
Duration in hrs. 0.57
Point Precipitation in inches 0.74
Rainfall intensity in./hr. 1.30
Pervious Area in sq. mi. 0.122
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.122
Curve Number 97
Runoff (Q) in inches 0.49
Time of Peak in hrs. 0.38
Peak Discharge in cfs 153
Runoff volume in af. 6

DESERT COVE SYSTEM

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 401

t	q
0.00	0
0.10	60
0.20	177
0.30	321
0.40	565
0.50	742
0.60	833
0.70	980
0.80	1079
0.90	1087
1.00	983
1.10	802
1.20	647
1.30	507
1.40	361
1.50	254
1.60	184
1.70	138
1.80	101
1.90	73
2.00	54
2.10	39
2.20	28
2.30	21
2.40	16
2.50	12
2.60	9
2.70	7
2.80	5
2.90	4
3.00	3
3.10	2
3.20	1
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-3

Frequency in years 2
Drainage area in sq. mi. 0.506
Length in ft. 6000
Elevation, ft. msl:
Top of Basin 1475
Bottom of Basin 1430
Basin Slope in % 0.8
Basin Width in ft. 2500
Time of Concentraion in hrs. 0.68
Precipitation:
Duration in hrs. 0.68
Point Precipitation in inches 0.78
Rainfall intensity in./hr. 1.15
Pervious Area in sq. mi. 0.253
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.253
Curve Number 97
Runoff (Q) in inches 0.49
Time of Peak in hrs. 0.45
Peak Discharge in cfs 267
Runoff Volume in af. 13

SCOTTSDALE AIRPORT DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 101

TOTAL OUTFLOW AT CP 102

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	32	16	7	0	0.08	7
0.20	102	67	8	0	0.56	8
0.30	205	153	12	0	1.73	12
0.40	263	234	19	0	3.50	19
0.50	337	300	29	0	5.74	29
0.60	468	403	43	0	8.71	43
0.70	469	469	62	0	12.07	62
0.80	352	410	79	0	14.81	79
0.90	210	281	89	0	16.40	89
1.00	131	171	93	0	17.05	93
1.10	81	106	94	0	17.15	94
1.20	51	66	92	0	16.94	92
1.30	32	42	90	0	16.54	90
1.40	21	27	86	0	16.05	86
1.50	13	17	83	0	15.50	83
1.60	9	11	79	0	14.94	79
1.70	6	7	76	0	14.37	76
1.80	3	5	72	0	13.81	72
1.90	2	3	69	0	13.26	69
2.00	2	2	66	0	12.74	66
2.10	1	1	63	0	12.23	63
2.20	0	1	60	0	11.73	60
2.30	0	0	57	0	11.26	57
2.40	0	0	55	0	10.81	55
2.50	0	0	52	0	10.38	52
2.60	0	0	50	0	9.96	50
2.70	0	0	48	0	9.57	48
2.80	0	0	46	0	9.19	46
2.90	0	0	44	0	8.82	44
3.00	0	0	42	0	8.48	42
3.10	0	0	40	0	8.14	40
3.20	0	0	39	0	7.82	39
3.30	0	0	37	0	7.51	37
3.40	0	0	36	0	7.22	36
3.50	0	0	34	0	6.93	34
3.60	0	0	33	0	6.66	33
3.70	0	0	32	0	6.40	32
3.80	0	0	31	0	6.14	31
3.90	0	0	29	0	5.90	29
4.00	0	0	28	0	5.67	28
4.10	0	0	27	0	5.44	27
4.20	0	0	26	0	5.22	26
4.30	0	0	25	0	5.01	25
4.40	0	0	25	0	4.81	25
4.50	0	0	24	0	4.61	24
4.60	0	0	23	0	4.43	23
4.70	0	0	22	0	4.24	22
4.80	0	0	21	0	4.07	21
4.90	0	0	21	0	3.90	21
5.00	0	0	20	0	3.73	20
5.10	0	0	19	0	3.57	19
5.20	0	0	19	0	3.42	19
5.30	0	0	18	0	3.27	18
5.40	0	0	17	0	3.12	17
5.50	0	0	17	0	2.98	17
5.60	0	0	16	0	2.85	16
5.70	0	0	16	0	2.72	16
5.80	0	0	15	0	2.59	15
5.90	0	0	15	0	2.47	15

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

SCOTTSDALE AIRPORT DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 101

TOTAL OUTFLOW AT CP 102

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	0	0	14	0	2.35	14
6.10	0	0	14	0	2.23	14
6.20	0	0	14	0	2.12	14
6.30	0	0	13	0	2.01	13
6.40	0	0	13	0	1.90	13
6.50	0	0	12	0	1.80	12
6.60	0	0	12	0	1.70	12
6.70	0	0	12	0	1.60	12
6.80	0	0	11	0	1.51	11
6.90	0	0	11	0	1.42	11
7.00	0	0	11	0	1.33	11
7.10	0	0	11	0	1.24	11
7.20	0	0	10	0	1.15	10
7.30	0	0	10	0	1.07	10
7.40	0	0	10	0	0.99	10
7.50	0	0	9	0	0.91	9
7.60	0	0	9	0	0.84	9
7.70	0	0	9	0	0.76	9
7.80	0	0	9	0	0.69	9
7.90	0	0	8	0	0.62	8
8.00	0	0	8	0	0.55	8
8.10	0	0	8	0	0.49	8
8.20	0	0	8	0	0.42	8
8.30	0	0	8	0	0.36	8
8.40	0	0	7	0	0.30	7
8.50	0	0	7	0	0.24	7
8.60	0	0	7	0	0.18	7
8.70	0	0	7	0	0.12	7
8.80	0	0	7	0	0.06	7
8.90	0	0	7	0	0.01	7
9.00	0	0	6	0	0.00	6

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-2

Frequency in years 2
Drainage area in sq. mi. 0.402
Length in ft. 6400
Elevation, ft. msl:
Top of Basin 1515
Bottom of Basin 1455
Basin Slope in % 0.9
Basin Width in ft. 1900
Time of Concentraion in hrs. 0.65
Precipitation:
Duration in hrs. 0.65
Point Precipitation in inches 0.78
Rainfall intensity in./hr. 1.20
Pervious Area in sq. mi. 0.201
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.201
Curve Number 97
Runoff (Q) in inches 0.51
Time of Peak in hrs. 0.44
Peak Discharge in cfs 227
Runoff Volume in af. 11

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 103

t	q	t	q
0.00	0	6.00	14
0.10	7	6.10	14
0.20	8	6.20	14
0.30	40	6.30	13
0.40	109	6.40	13
0.50	208	6.50	12
0.60	268	6.60	12
0.70	282	6.70	12
0.80	262	6.80	11
0.90	218	6.90	11
1.00	179	7.00	11
1.10	153	7.10	11
1.20	134	7.20	10
1.30	119	7.30	10
1.40	106	7.40	10
1.50	97	7.50	9
1.60	89	7.60	9
1.70	82	7.70	9
1.80	77	7.80	9
1.90	72	7.90	8
2.00	68	8.00	8
2.10	65	8.10	8
2.20	61	8.20	8
2.30	58	8.30	8
2.40	55	8.40	7
2.50	52	8.50	7
2.60	50	8.60	7
2.70	48	8.70	7
2.80	46	8.80	7
2.90	44	8.90	7
3.00	42	9.00	6
3.10	40	9.10	0
3.20	39	9.20	0
3.30	37	9.30	0
3.40	36	9.40	0
3.50	34	9.50	0
3.60	33	9.60	0
3.70	32	9.70	0
3.80	31	9.80	0
3.90	29	9.90	0
4.00	28	10.00	0
4.10	27	10.10	0
4.20	26	10.20	0
4.30	25	10.30	0
4.40	25	10.40	0
4.50	24	10.50	0
4.60	23	10.60	0
4.70	22	10.70	0
4.80	21	10.80	0
4.90	21	10.90	0
5.00	20	11.00	0
5.10	19	11.10	0
5.20	19	11.20	0
5.30	18	11.30	0
5.40	17	11.40	0
5.50	17	11.50	0
5.60	16	11.60	0
5.70	16	11.70	0
5.80	15	11.80	0
5.90	15	11.90	0

t = time in hours

q = discharge in cfs

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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-8

Frequency in years 2
Drainage area in sq. mi. 0.106
Length in ft. 5000
Elevation, ft. msl:
Top of Basin 1430
Bottom of Basin 1400
Basin Slope in % 0.6
Basin Width in ft. 1200
Time of Concentraion in hrs. 0.64
Precipitation:
Duration in hrs. 0.64
Point Precipitation in inches 0.77
Rainfall intensity in./hr. 1.20
Pervious Area in sq. mi. 0.053
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.053
Curve Number 97
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.43
Peak Discharge in cfs 60
Runoff Volume in af. 3

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-9

Frequency in years 2
Drainage area in sq. mi. 0.191
Length in ft. 4100
Elevation, ft. msl:
Top of Basin 1450
Bottom of Basin 1408
Basin Slope in % 1.0
Basin Width in ft. 1300
Time of Concentraion in hrs. 0.45
Precipitation:
Duration in hrs. 0.45
Point Precipitation in inches 0.67
Rainfall intensity in./hr. 1.49
Pervious Area in sq. mi. 0.096
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.095
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.30
Peak Discharge in cfs 144
Runoff Volume in af. 5

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-10

Frequency in years 2
Drainage area in sq. mi. 0.091
Length in ft. 2750
Elevation, ft. msl:
Top of Basin 1408
Bottom of Basin 1385
Basin Slope in % 0.8
Basin Width in ft. 1100
Time of Concentraion in hrs. 0.36
Precipitation:
Duration in hrs. 0.36
Point Precipitation in inches 0.59
Rainfall intensity in./hr. 1.67
Pervious Area in sq. mi. 0.046
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.045
Curve Number 98
Runoff (Q) in inches 0.43
Time of Peak in hrs. 0.24
Peak Discharge in cfs 79
Runoff Volume in af. 2

CACTUS DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	34	17	5	0	0.10	5
0.20	133	84	6	0	0.75	6
0.30	237	185	7	0	2.22	7
0.40	251	244	10	0	4.15	10
0.50	237	244	12	0	6.07	12
0.60	237	237	15	0	7.91	15
0.70	286	261	18	0	9.92	18
0.80	316	301	21	0	12.23	21
0.90	312	314	25	0	14.62	25
1.00	281	296	29	0	16.83	29
1.10	230	256	32	0	18.68	32
1.20	187	208	35	0	20.11	35
1.30	158	172	37	0	21.23	37
1.40	138	148	39	0	22.13	39
1.50	121	129	40	0	22.86	40
1.60	107	114	41	0	23.46	41
1.70	97	102	42	0	23.96	42
1.80	89	93	43	0	24.37	43
1.90	83	86	44	0	24.72	44
2.00	77	80	44	0	25.02	44
2.10	72	75	45	0	25.26	45
2.20	68	70	45	0	25.47	45
2.30	65	66	46	0	25.64	46
2.40	61	63	46	0	25.78	46
2.50	58	59	46	0	25.89	46
2.60	55	56	46	0	25.97	46
2.70	52	54	46	0	26.03	46
2.80	50	51	47	0	26.06	47
2.90	48	49	47	0	26.08	47
3.00	46	47	47	0	26.09	47
3.10	44	45	47	0	26.07	47
3.20	42	43	47	0	26.05	47
3.30	40	41	46	0	26.00	46
3.40	39	40	46	0	25.95	46
3.50	37	38	46	0	25.88	46
3.60	36	37	46	0	25.80	46
3.70	34	35	46	0	25.71	46
3.80	33	34	46	0	25.61	46
3.90	32	32	45	0	25.51	45
4.00	31	31	45	0	25.39	45
4.10	29	30	45	0	25.27	45
4.20	28	29	45	0	25.14	45
4.30	27	28	44	0	25.00	44
4.40	26	27	44	0	24.86	44
4.50	25	26	44	0	24.71	44
4.60	25	25	44	0	24.56	44
4.70	24	24	43	0	24.40	43
4.80	23	23	43	0	24.24	43
4.90	22	22	43	0	24.07	43
5.00	21	22	42	0	23.90	42
5.10	21	21	42	0	23.73	42
5.20	20	20	42	0	23.55	42
5.30	19	20	41	0	23.37	41
5.40	19	19	41	0	23.19	41
5.50	18	18	40	0	23.01	40
5.60	17	18	40	0	22.83	40
5.70	17	17	40	0	22.64	40
5.80	16	17	39	0	22.45	39
5.90	16	16	39	0	22.26	39

Water Resources Associates, Inc.
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CACTUS DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 104

TOTAL OUTFLOW AT CP 105

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
6.00	15	16	39	0	22.07	39
6.10	15	15	38	0	21.88	38
6.20	14	15	38	0	21.69	38
6.30	14	14	38	0	21.50	38
6.40	14	14	37	0	21.30	37
6.50	13	13	37	0	21.11	37
6.60	13	13	36	0	20.92	36
6.70	12	13	36	0	20.72	36
6.80	12	12	36	0	20.53	36
6.90	12	12	35	0	20.33	35
7.00	11	12	35	0	20.14	35
7.10	11	11	35	0	19.95	35
7.20	11	11	34	0	19.75	34
7.30	11	11	34	0	19.56	34
7.40	10	10	34	0	19.37	34
7.50	10	10	33	0	19.18	33
7.60	10	10	33	0	18.99	33
7.70	9	10	33	0	18.80	33
7.80	9	9	32	0	18.61	32
7.90	9	9	32	0	18.42	32
8.00	9	9	32	0	18.23	32
8.10	8	9	31	0	18.05	31
8.20	8	8	31	0	17.86	31
8.30	8	8	31	0	17.67	31
8.40	8	8	30	0	17.49	30
8.50	8	8	30	0	17.31	30
8.60	7	8	30	0	17.13	30
8.70	7	7	29	0	16.95	29
8.80	7	7	29	0	16.77	29
8.90	7	7	29	0	16.59	29
9.00	7	7	28	0	16.41	28
9.10	7	7	28	0	16.23	28
9.20	6	7	28	0	16.06	28
9.30	0	3	27	0	15.86	27
9.40	0	0	27	0	15.64	27
9.50	0	0	27	0	15.42	27
9.60	0	0	26	0	15.20	26
9.70	0	0	26	0	14.99	26
9.80	0	0	26	0	14.78	26
9.90	0	0	25	0	14.57	25
10.00	0	0	25	0	14.36	25
10.10	0	0	24	0	14.16	24
10.20	0	0	24	0	13.96	24
10.30	0	0	24	0	13.76	24
10.40	0	0	23	0	13.57	23
10.50	0	0	23	0	13.38	23
10.60	0	0	23	0	13.19	23
10.70	0	0	23	0	13.00	23
10.80	0	0	22	0	12.82	22
10.90	0	0	22	0	12.64	22
11.00	0	0	22	0	12.46	22
11.10	0	0	21	0	12.28	21
11.20	0	0	21	0	12.11	21
11.30	0	0	21	0	11.94	21
11.40	0	0	21	0	11.77	21
11.50	0	0	20	0	11.60	20
11.60	0	0	20	0	11.43	20
11.70	0	0	20	0	11.27	20
11.80	0	0	20	0	11.11	20
11.90	0	0	19	0	10.95	19

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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-15

Frequency in years 2
Drainage area in sq. mi. 0.240
Length in ft. 4750
Elevation, ft. msl:
Top of Basin 1365
Bottom of Basin 1335
Basin Slope in % 0.6
Basin Width in ft. 1400
Time of Concentraion in hrs. 0.83
Precipitation:
Duration in hrs. 0.83
Point Precipitation in inches 0.82
Rainfall intensity in./hr. 0.99
Pervious Area in sq. mi. 0.120
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.120
Curve Number 96
Runoff (Q) in inches 0.48
Time of Peak in hrs. 0.55
Peak Discharge in cfs 102
Runoff Volume in af. 6

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-16

Frequency in years 2
Drainage area in sq. mi. 0.036
Length in ft. 2100
Elevation, ft. msl:
Top of Basin 1365
Bottom of Basin 1352
Basin Slope in % 0.6
Basin Width in ft. 500
Time of Concentraion in hrs. 0.37
Precipitation:
Duration in hrs. 0.37
Point Precipitation in inches 0.60
Rainfall intensity in./hr. 1.62
Pervious Area in sq. mi. 0.018
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.018
Curve Number 98
Runoff (Q) in inches 0.43
Time of Peak in hrs. 0.25
Peak Discharge in cfs 30
Runoff Volume in af. 1

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 109

t	q	t	q
0.00	0	6.00	51
0.10	9	6.10	51
0.20	37	6.20	50
0.30	105	6.30	50
0.40	181	6.40	49
0.50	265	6.50	49
0.60	314	6.60	48
0.70	329	6.70	48
0.80	323	6.80	47
0.90	313	6.90	47
1.00	328	7.00	46
1.10	299	7.10	46
1.20	243	7.20	45
1.30	198	7.30	45
1.40	161	7.40	44
1.50	134	7.50	44
1.60	116	7.60	43
1.70	104	7.70	43
1.80	96	7.80	42
1.90	89	7.90	42
2.00	84	8.00	41
2.10	80	8.10	41
2.20	77	8.20	40
2.30	74	8.30	40
2.40	73	8.40	39
2.50	71	8.50	39
2.60	70	8.60	38
2.70	69	8.70	38
2.80	68	8.80	38
2.90	68	8.90	37
3.00	67	9.00	37
3.10	67	9.10	36
3.20	66	9.20	36
3.30	66	9.30	35
3.40	65	9.40	35
3.50	65	9.50	35
3.60	64	9.60	34
3.70	64	9.70	34
3.80	63	9.80	33
3.90	63	9.90	33
4.00	62	10.00	32
4.10	62	10.10	32
4.20	61	10.20	26
4.30	61	10.30	25
4.40	60	10.40	25
4.50	60	10.50	24
4.60	59	10.60	24
4.70	59	10.70	24
4.80	58	10.80	23
4.90	58	10.90	23
5.00	57	11.00	23
5.10	56	11.10	23
5.20	56	11.20	22
5.30	55	11.30	22
5.40	55	11.40	22
5.50	54	11.50	21
5.60	54	11.60	21
5.70	53	11.70	21
5.80	53	11.80	21
5.90	52	11.90	20

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-14

Frequency in years 2
Drainage area in sq. mi. 0.235
Length in ft. 4700
Elevation, ft. msl:
Top of Basin 1365
Bottom of Basin 1333
Basin Slope in % 0.7
Basin Width in ft. 1400
Time of Concentraion in hrs. 0.79
Precipitation:
Duration in hrs. 0.79
Point Precipitation in inches 0.82
Rainfall intensity in./hr. 1.04
Pervious Area in sq. mi. 0.118
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.117
Curve Number 96
Runoff (Q) in inches 0.50
Time of Peak in hrs. 0.53
Peak Discharge in cfs 107
Runoff Volume in af. 6

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-17

Frequency in years 2
Drainage area in sq. mi. 0.063
Length in ft. 1320
Elevation, ft. msl:
Top of Basin 1336
Bottom of Basin 1332
Basin Slope in % 0.3
Basin Width in ft. 1000
Time of Concentraion in hrs. 0.33
Precipitation:
Duration in hrs. 0.33
Point Precipitation in inches 0.59
Rainfall intensity in./hr. 1.76
Pervious Area in sq. mi. 0.032
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.031
Curve Number 98
Runoff (Q) in inches 0.43
Time of Peak in hrs. 0.22
Peak Discharge in cfs 58
Runoff Volume in af. 1

CHAPARRAL HIGH SCHOOL DETENTION BASIN

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

INFLOW AT CP 110

TOTAL OUTFLOW AT CP 111

Time (hrs)	Inflow (cfs)	Average Inflow (cfs)	Controlled Outflow (cfs)	Uncontrolled Outflow (cfs)	Basin Storage (af)	Total Outflow (cfs)
0.00	0	0	0	0	0.00	0
0.10	10	5	0	0	0.04	0
0.20	30	20	0	0	0.20	0
0.30	64	47	0	0	0.59	0
0.40	94	79	1	0	1.24	1
0.50	106	100	1	0	2.06	1
0.60	104	105	1	0	2.92	1
0.70	90	97	1	0	3.71	1
0.80	72	81	2	0	4.36	2
0.90	49	60	2	0	4.85	2
1.00	36	43	2	0	5.18	2
1.10	27	32	2	0	5.42	2
1.20	20	24	2	0	5.60	2
1.30	15	17	2	0	5.72	2
1.40	11	13	2	0	5.81	2
1.50	8	9	2	0	5.87	2
1.60	6	7	2	0	5.90	2
1.70	4	5	2	0	5.92	2
1.80	3	4	2	0	5.93	2
1.90	2	3	2	0	5.94	2
2.00	2	2	2	0	5.93	2
2.10	1	1	2	0	5.92	2
2.20	1	1	2	0	5.91	2
2.30	1	1	2	0	5.90	2
2.40	1	1	2	0	5.89	2
2.50	0	0	2	0	5.87	2
2.60	0	0	2	0	5.85	2
2.70	0	0	2	0	5.83	2
2.80	0	0	2	0	5.80	2

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2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 112

t	q	t	q
0.00	0	6.00	69
0.10	0	6.10	68
0.20	42	6.20	67
0.30	150	6.30	66
0.40	303	6.40	66
0.50	435	6.50	65
0.60	577	6.60	64
0.70	689	6.70	63
0.80	793	6.80	63
0.90	891	6.90	62
1.00	1015	7.00	61
1.10	1036	7.10	61
1.20	897	7.20	60
1.30	733	7.30	59
1.40	563	7.40	58
1.50	465	7.50	58
1.60	409	7.60	57
1.70	363	7.70	56
1.80	339	7.80	56
1.90	309	7.90	55
2.00	334	8.00	55
2.10	338	8.10	54
2.20	243	8.20	53
2.30	186	8.30	53
2.40	147	8.40	52
2.50	122	8.50	51
2.60	114	8.60	51
2.70	108	8.70	50
2.80	103	8.80	50
2.90	100	8.90	49
3.00	97	9.00	49
3.10	95	9.10	48
3.20	94	9.20	47
3.30	92	9.30	47
3.40	91	9.40	46
3.50	90	9.50	46
3.60	89	9.60	45
3.70	88	9.70	45
3.80	87	9.80	44
3.90	86	9.90	44
4.00	85	10.00	43
4.10	84	10.10	42
4.20	83	10.20	42
4.30	83	10.30	35
4.40	82	10.40	35
4.50	81	10.50	34
4.60	80	10.60	34
4.70	79	10.70	34
4.80	78	10.80	33
4.90	78	10.90	33
5.00	77	11.00	32
5.10	76	11.10	32
5.20	75	11.20	32
5.30	74	11.30	31
5.40	73	11.40	31
5.50	73	11.50	30
5.60	72	11.60	30
5.70	71	11.70	30
5.80	70	11.80	29
5.90	69	11.90	29

t = time in hours

q = discharge in cfs

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Scottsdale, Arizona
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HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

B-15

Frequency in years 2
Drainage area in sq. mi. 0.424
Length in ft. 4000
Elevation, ft. msl:
Top of Basin 1353
Bottom of Basin 1338
Basin Slope in % 0.4
Basin Width in ft. 3000
Time of Concentraion in hrs. 0.91
Precipitation:
Duration in hrs. 0.91
Point Precipitation in inches 0.86
Rainfall intensity in./hr. 0.95
Pervious Area in sq. mi. 0.212
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.212
Curve Number 96
Runoff (Q) in inches 0.49
Time of Peak in hrs. 0.60
Peak Discharge in cfs 168
Runoff Volume in af. 11

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 114

t	q	t	q
0.00	0	6.00	70
0.10	13	6.10	69
0.20	39	6.20	69
0.30	79	6.30	68
0.40	171	6.40	67
0.50	309	6.50	66
0.60	471	6.60	66
0.70	595	6.70	65
0.80	717	6.80	64
0.90	803	6.90	63
1.00	876	7.00	63
1.10	954	7.10	62
1.20	1062	7.20	61
1.30	1073	7.30	61
1.40	925	7.40	60
1.50	754	7.50	59
1.60	579	7.60	58
1.70	477	7.70	58
1.80	419	7.80	57
1.90	370	7.90	56
2.00	345	8.00	56
2.10	313	8.10	55
2.20	337	8.20	55
2.30	341	8.30	54
2.40	245	8.40	53
2.50	187	8.50	53
2.60	148	8.60	52
2.70	123	8.70	51
2.80	115	8.80	51
2.90	108	8.90	50
3.00	103	9.00	50
3.10	100	9.10	49
3.20	97	9.20	49
3.30	95	9.30	48
3.40	94	9.40	47
3.50	92	9.50	47
3.60	91	9.60	46
3.70	90	9.70	46
3.80	89	9.80	45
3.90	88	9.90	45
4.00	87	10.00	44
4.10	86	10.10	44
4.20	85	10.20	43
4.30	84	10.30	42
4.40	83	10.40	42
4.50	83	10.50	35
4.60	82	10.60	35
4.70	81	10.70	34
4.80	80	10.80	34
4.90	79	10.90	34
5.00	78	11.00	33
5.10	78	11.10	33
5.20	77	11.20	32
5.30	76	11.30	32
5.40	75	11.40	32
5.50	74	11.50	31
5.60	73	11.60	31
5.70	73	11.70	30
5.80	72	11.80	30
5.90	71	11.90	30

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

2-YEAR FREQUENCY SUMMER STORM HYDROGRAPH

AT CP 113

t	q
0.00	0
0.10	9
0.20	26
0.30	54
0.40	89
0.50	115
0.60	124
0.70	123
0.80	110
0.90	94
1.00	72
1.10	53
1.20	41
1.30	32
1.40	25
1.50	19
1.60	15
1.70	12
1.80	9
1.90	7
2.00	5
2.10	4
2.20	3
2.30	2
2.40	2
2.50	1
2.60	1
2.70	1
2.80	1
2.90	0
3.00	0
3.10	0
3.20	0
3.30	0
3.40	0
3.50	0
3.60	0
3.70	0
3.80	0
3.90	0
4.00	0
4.10	0
4.20	0
4.30	0
4.40	0
4.50	0
4.60	0
4.70	0
4.80	0
4.90	0
5.00	0
5.10	0
5.20	0
5.30	0
5.40	0
5.50	0
5.60	0
5.70	0
5.80	0
5.90	0

t = time in hours

q = discharge in cfs

Water Resources Associates, Inc.
Scottsdale, Arizona
July 1978

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

C-18

Frequency in years 2
Drainage area in sq. mi. 0.333
Length in ft. 4000
Elevation, ft. msl:
Top of Basin 1334
Bottom of Basin 1320
Basin Slope in % 0.4
Basin Width in ft. 2200
Time of Concentraion in hrs. 0.94
Precipitation:
Duration in hrs. 0.94
Point Precipitation in inches 0.86
Rainfall intensity in./hr. 0.91
Pervious Area in sq. mi. 0.167
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.166
Curve Number 96
Runoff (Q) in inches 0.49
Time of Peak in hrs. 0.63
Peak Discharge in cfs 125
Runoff Volume in af. 9

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-1

Frequency in years 2
Drainage area in sq. mi. 0.314
Length in ft. 4400
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1470
Basin Slope in % 0.9
Basin Width in ft. 2000
Time of Concentraion in hrs. 0.50
Precipitation:
Duration in hrs. 0.50
Point Precipitation in inches 0.69
Rainfall intensity in./hr. 1.40
Pervious Area in sq. mi. 0.157
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.157
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.33
Peak Discharge in cfs 218
Runoff Volume in af. 8

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-2

Frequency in years 2
Drainage area in sq. mi. 0.250
Length in ft. 4000
Elevation, ft. msl:
Top of Basin 1470
Bottom of Basin 1435
Basin Slope in % 0.9
Basin Width in ft. 1700
Time of Concentraion in hrs. 0.47
Precipitation:
Duration in hrs. 0.47
Point Precipitation in inches 0.68
Rainfall intensity in./hr. 1.45
Pervious Area in sq. mi. 0.125
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.125
Curve Number 98
Runoff (Q) in inches 0.47
Time of Peak in hrs. 0.31
Peak Discharge in cfs 182
Runoff Volume in af. 6

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-3

Frequency in years 2
Drainage area in sq. mi. 0.165
Length in ft. 2700
Elevation, ft. msl:
Top of Basin 1435
Bottom of Basin 1412
Basin Slope in % 0.9
Basin Width in ft. 1700
Time of Concentraion in hrs. 0.35
Precipitation:
Duration in hrs. 0.35
Point Precipitation in inches 0.60
Rainfall intensity in./hr. 1.71
Pervious Area in sq. mi. 0.083
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.082
Curve Number 98
Runoff (Q) in inches 0.43
Time of Peak in hrs. 0.23
Peak Discharge in cfs 149
Runoff Volume in af. 4

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-4

Frequency in years 2
Drainage area in sq. mi. 0.113
Length in ft. 2640
Elevation, ft. msl:
Top of Basin 1412
Bottom of Basin 1390
Basin Slope in % 0.8
Basin Width in ft. 1400
Time of Concentraion in hrs. 0.35
Precipitation:
Duration in hrs. 0.35
Point Precipitation in inches 0.58
Rainfall intensity in./hr. 1.69
Pervious Area in sq. mi. 0.057
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.056
Curve Number 98
Runoff (Q) in inches 0.42
Time of Peak in hrs. 0.23
Peak Discharge in cfs 100
Runoff Volume in af. 3

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-5

Frequency in years 2
Drainage area in sq. mi. 0.356
Length in ft. 4800
Elevation, ft. msl:
Top of Basin 1510
Bottom of Basin 1465
Basin Slope in % 0.9
Basin Width in ft. 2000
Time of Concentraion in hrs. 0.52
Precipitation:
Duration in hrs. 0.52
Point Precipitation in inches 0.72
Rainfall intensity in./hr. 1.38
Pervious Area in sq. mi. 0.178
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.178
Curve Number 98
Runoff (Q) in inches 0.49
Time of Peak in hrs. 0.35
Peak Discharge in cfs 244
Runoff Volume in af. 9

HYDROLOGIC BASIN DATA SHEET

WATER RESOURCES ASSOCIATES INC.
Scottsdale Arizona

DRAINAGE AREA LOCATION

DC-6

Frequency in years 2
Drainage area in sq. mi. 0.392
Length in ft. 4800
Elevation, ft. msl:
Top of Basin 1465
Bottom of Basin 1420
Basin Slope in % 0.9
Basin Width in ft. 2300
Time of Concentraion in hrs. 0.52
Precipitation:
Duration in hrs. 0.52
Point Precipitation in inches 0.72
Rainfall intensity in./hr. 1.38
Pervious Area in sq. mi. 0.196
Infiltration in./hr. 0.70
Impervious Area in sq. mi. 0.196
Curve Number 98
Runoff (Q) in inches 0.49
Time of Peak in hrs. 0.35
Peak Discharge in cfs 269
Runoff Volume in af. 10