APPENDIX 6A

Preliminary Drainage Study – Part 1

PRELIMINARY DRAINAGE STUDY-PART 1

FOR

Mill Creek Promenade
SW Corner of Haun and Garbini Roads
in Menifee California

Prepared for:

Sherman and Haun, LLC
31103 Rancho Viejo Road
Suite 535
San Juan Capistrano, CA 92675
(949) 874-7474

Prepared by:

PACIFIC COAST LAND CONSULTANTS
25096 Jefferson Avenue
Suite D
Murrieta, CA, 92562
(951) 698-1350

Prepared by Benjamin Dela Cruz
RCE 58892
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Mill Creek Drainage Report:

1.0) Scope:

The property is located at the Southwest corner of Haun and Garbani Roads in the city of Menifee California, more precisely being a division of the W ½ of the NE1/4 of Section 15, T 6 S, R 5 W. The property encompasses three parcels, their Assessor's Parcel Numbers from north to south is as follows 360-350-006, 360-350-011 and 360-350-017. For the purpose of clarity Parcel number 1 with APN 360-350-006 shall be designated 'the Northern Sector" herein. The properties combined are 58.5 acres. The property upon completion shall have available condominiums and apartments for multifamily accommodations and commercial with retail outlets and restaurants.

2.0) Existing Drainage and FIRM Map:

The site is within Zone X of the FIRM, Flood Insurance Rate Map, Riverside County, Panel 2070 of 3805, Map Number 06065C2070H, map revised August 18, 2014. Zone X represents the area that has no possibility of flooding during the 100 yr. event. There will be no property damage and all street flows are contained within the ROW. Please see Appendix H – Street Capacity Calculations

The existing property soil and environment is barren alluvial fan material disbursed through erosion and transported sediment from the foothills located south of the site, however, most of the site is covered by perennial grass. The existing site is divided into nine areas; areas eA, eB, eC, eD, eE, eF, eG, eH, and eJ. Areas eA to eE drains to the existing creek. Areas eF to eJ drains to Garbani Road. There is also a natural channel that conveys the off-site flow through the site. The natural stream daylights near three existing 24" culverts in Haun Road near Garbani Road (see off-site flow, Drainage Map). This existing creek and its function will be discussed in the off-site section of this report.

The areas eF to eJ discharges to Garbani Road. This flow is captured in the existing 54inch RCP in Garbani Road ROW, this line is known as "Line B" of the Menifee Valley and Haun Rd Storm Drain System.

The site flow receiving waters are Salt Creek, Canyon Lake and Lake Elsinore. The distances to Canyon Lake and Lake Elsinore are 8.8 and 12.9 miles downstream, respectively.

3.0) Proposed Drainage:

The proposed site will be divided into 6 (six) areas; areas A, B, C, D, E and F. Areas A and C will drain to Garbani Rd and the existing Line B storm drain. Areas B to F will drain to the existing creek.

Area A will store all the storm runoffs into an extended detention basin and mitigate the storm flow increase by storing the water temporarily and controlling the release of flow.

Area C will store all the storm runoffs into underground storage chambers by Storm Tech. The chambers will have a cover of approximately 2 ft and underlain with 2 ft of sand for filtration. The storm runoffs will be release in a controlled flow to mitigate the increase of runoff flow between the existing condition and developed condition.

Area F will also store all the storm runoffs into underground storage chambers by Storm Tech. The chambers will have a cover of approximately 2 ft and underlain with 1.5 ft of sand for filtration. The storm runoffs will be release in a controlled flow to mitigate the increase of runoff flow between the existing condition and developed condition.

Area B, D, and E will flow to a bioretention facility. The voids in the sand and the available volume created at the top will serve as a temporary storm water storage. For details see Appendix G _- Pond Volume Calculations for all ponds for Area A, B, C, D, E & F.

All the detention basin and underground storage pipes will all be designed to handle the 2yr 24hr storm (Unit Hydrograph Method). The 2yr 24hr storm design will qualify the site under Section F.2 HCOC Mitigation of the Riverside County LID Design for Water Quality Management Plan. Please see Appendix D - 2yr 24 hr Storm Flow (Q) Calculations Existing & Proposed. Below is the summary of the Q(flows), as shown the existing flow Q=5.98 cfs is greater than the proposed Q=3.17 cfs.

Unit Hydrograph Method – 2yr 24hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Routed on Pond Q(cfs)
eABCDE	30.44	3.31	A	20.15	0.393
eFGHJ	24.4	2.67	B	1.00	0.064
Total	54.84	5.98	C	16.60	1.861
			D	1.20	0.064
			E	5.43	0.393
			F	5.94	0.393
			Total	50.32	3.17

There is also concerns regarding an existing 54” RCP that was in the Menifee Valley Storm Drain, Ruxton Streets Storm Drain and Claymen Street Storm Drain Plan, Zone 4 study of July1987 and revised in June 1991. This line will be investigated for capacity using the 100yr1hr storm by Unit Hydrograph Method . The capacity of the line is such that when all the development of this proposed site is done and upstream

build out conditions of the other lots are in-place, the total run-off flows can be handled by this existing 54” RCP storm drain line.

4.0) Streets:

The existing Garbani road is an AC half section with just an ac berm on the eastern bound travel lane side. The western bound lanes are fully developed with curb and gutter section. This was developed by an earlier project. The eastern bound lane of Garbani road and the northern bound lane of Sheman road will all be improved with sidewalk, trails, and curb and gutter. Garbani road will also have its own storm drain line to convey offsite flows to the existing 54” RCP at Ruxton Street at the adjacent neighborhood.

The existing Haun Road section is a 30 ft. wide AC pavement with open swales on either side. This will be replaced with developed half street improvements on the southbound lane; the northbound half will remain as it exist. The developed curb, gutter and sidewalk will be similar to the existing Haun Road property north of the proposed project.

The proposed improvements will include catch basins on Haun Road and Garbani Road to capture the flows from project development and offsite flows. The flows will be contained within the curb and gutter section of Haun Road, Garbani Road, and Sherman Road. Catch basins will be added when Q10 exceeds the top of curb and/or Q100 exceeds beyond the right-of-way line.

5.0) Outlet Works:

The extended detention basin, underground storage chambers, and bioretention facilities have been sized to mitigate the required peak flows through storage volume and metered outlets (orifice/weir outlets). The following Storage Discharge Tables; depth vs storage and discharge for each facility will quantify the resulting flows:

STAGE DISCHARGE TABLE
Area A – Extended Detention Pond/Basin
4” Orifice Opening @ 0.0 ft
36” Weir Opening @ 3.50 ft

Depth (ft)	Volume (ac-ft)	Discharge (cfs)
1	0.208	0.393
2	0.457	0.393
3	0.751	0.393
4	1.091	0.393
5	1.480	40.379

Area B – Bioretention Pond/Basin
2” Orifice Opening @ 0.0 ft
2.4 ft Weir Opening @ 7.0 ft

Depth (ft)	Volume (ac-ft)	Discharge (cfs)
1	0.029	0.064
6.48	0.149	0.064
7.48	0.198	25.138

Area C – StormTech Chambers
4” Orifice Opening @ 0.0 ft
12” dia. Weir Opening @ 3.0 ft
18” dia. Weir Opening @ 5.5 ft

Depth (ft)	Volume (ac-ft)	Discharge (cfs)
1	0.174	0.393
2	0.435	0.393
3	0.7	6.676
4	1.081	6.676
5	1.367	16.673
6	1.475	20.813

Area D – Bioretention Pond/Basin
2” Orifice Opening @ 0.5 ft
1.0 ft Weir Opening @ 4.25 ft

Depth (ft)	Volume (ac-ft)	Discharge (cfs)
1	0.042	0.064
3.25	0.113	0.064
4.40	0.222	2.498

Area E – Bioretention Pond/Basin
2” Orifice Opening @ 0.0 ft
2.2 ft Weir Opening @ 4.7 ft

Depth (ft)	Volume (ac-ft)	Discharge (cfs)
1	0.098	0.393
3.22	0.261	0.393
5.22	0.652	22.322

Area F – StormTech Chambers
4” Orifice Opening @ 0.0 ft
18” Weir Opening @ 3.0 ft

Depth (ft)	Volume (ac-ft)	Discharge (cfs)
1	0.103	0.393
2.5	0.219	0.393
3.5	0.382	10.390
4	0.460	14.530

Areas A and C discharge to the existing 54" RCP storm drain under Garbani Road and are mitigated to a Q100 of ±130.20 cfs, which is lower than the design Q100 of 133.35 cfs shown on the "As-built" plans for the 54" RCP. See Appendix E.

Areas B, D, E and F discharge to the proposed 4'H x 20'W Box culvert, which is to replace the existing 3-30" CMP arches under Haun Road just south of Garbani Road. These flows will continue in the existing natural drainage course.

The proposed channel, and box culvert crossings on Haun Road and pipes 36" and smaller will be maintained by the city of Menifee. All pipes larger than 36" will be maintained by Riveside County Flood Control and Water Conservation District.

6.0) Peak Flow Mitigation: (Extended Detention Basin, Bioretention Facility and Underground Storage Chambers by Storm Tech)

Flow is increased by the upstream development impervious percentage. The peak flow will be mitigated in extended detention basin, and underground chambers by Storm Tech, and bioretention facilities through storage and metered outlet (orifice/weir outlets). At the end of this section is a summary of flows for the pre and post development conditions. Comparisons between the pre and post development conditions flows are shown below.

Below is a table of unit hydrograph flows and volume for the existing and proposed condition. The following will show how much flow and volume is being mitigated:

Q (FLOW) FOR EXISTING AND PROPOSED @ 100YR & 10YR:

Unit Hydrograph Method – 100yr 1hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	81.54	A	20.15	54.7	33.8
FGHJ	24.4	73.25	B	1.00	3.20	0.06
Total	54.84	154.89	C	16.60	50.2	14.02
			D	1.20	4.14	0.12
			E	5.10	14.8	7.00
			F	5.94	18.4	10.20
			Total	49.99	145.44	65.30

Unit Hydrograph Method – 100yr 3hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	44.90	A	20.15	32.20	28.9
FGHJ	24.4	37.40	B	1.00	1.70	0.06
Total	54.84	82.30	C	16.60	27.90	16.24

			D	1.20	2.11	0.76
			E	5.10	8.60	6.75
			F	5.94	10.10	8.13
			Total	49.99	82.61	60.84

Unit Hydrograph Method – 100yr 6hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	42.40	A	20.15	31.10	27.50
FGHJ	24.4	34.00	B	1.00	1.70	1.50
Total	54.84	76.40	C	16.60	27.00	18.50
			D	1.20	2.00	1.20
			E	5.10	8.30	6.70
			F	5.94	9.74	7.90
			Total	49.99	79.84	63.30

Q (FLOW) FOR EXISTING AND PROPOSED @ 100YR & 10YR: (cont'd…)

Unit Hydrograph Method – 100yr 24hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	15.20	A	20.15	11.70	11.60
FGHJ	24.4	12.20	B	1.00	0.60	0.60
Total	54.84	27.40	C	16.60	10.00	6.70
			D	1.20	0.73	0.65
			E	5.10	3.15	3.05
			F	5.94	3.61	3.52
			Total	49.99	29.79	26.12

Unit Hydrograph Method – 10yr 1hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	52.10	A	20.15	35.60	6.10
FGHJ	24.4	47.70	B	1.00	2.10	0.06
Total	54.84	99.80	C	16.60	31.04	6.70
			D	1.20	2.72	0.10
			E	5.10	9.70	1.95
			F	5.94	12.03	5.04
			Total	49.99	93.19	19.95

Q (FLOW) FOR EXISTING AND PROPOSED @ 100YR & 10YR: (cont'd…)

Unit Hydrograph Method – 10yr 3hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	28.60	A	20.15	21.20	16.64
FGHJ	24.4	23.90	B	1.00	1.15	0.06
Total	54.84	52.50	C	16.60	16.71	6.70
			D	1.20	1.40	0.10
			E	5.10	5.70	3.97
			F	5.94	6.71	5.30
			Total	49.99	52.87	32.77

Unit Hydrograph Method – 10yr 6hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	27.60	A	20.15	20.90	18.40
FGHJ	24.4	22.20	B	1.00	1.14	0.06
Total	54.84	49.80	C	16.60	16.50	6.70
			D	1.20	1.40	0.50
			E	5.10	5.60	4.53
			F	5.94	6.62	5.33
			Total	49.99	52.16	35.52

Unit Hydrograph Method – 10yr 24hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Developed w/o Pond Q(cfs)	Routed on Pond Q(cfs)
ABCDE	30.44	8.20	A	20.15	7.03	6.95
FGHJ	24.4	6.60	B	1.00	0.40	0.06
Total	54.84	14.80	C	16.60	4.64	3.85
			D	1.20	0.50	0.32
			E	5.10	2.00	1.91
			F	5.94	2.24	2.20
			Total	49.99	16.81	15.29

Q (FLOW) FOR EXISTING AND PROPOSED @ 2YR:

Unit Hydrograph Method – 2yr 24hr

Area Designation	Area (ac)	Existing/Undeveloped Q(cfs)	Area Designation	Area (ac)	Routed on Pond Q(cfs)
ABCDE	30.44	3.31	A	20.15	0.393
FGHJ	24.4	2.67	B	1.00	0.064
Total	54.84	5.98	C	16.60	1.861
			D	1.20	0.064

			E	5.10	0.393
			F	5.94	0.393
			Total	49.99	3.17

Q (FLOW) FOR EXISTING AND PROPOSED @ 100YR & 10YR: (cont'd…)

Unit Hydrograph Method – 100yr 1hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	2.73	A	20.15	1.91
FGHJ	24.4	2.19	B	1.00	0.01
Total	54.84	4.92	C	16.60	1.61
			D	1.20	0.01
			E	5.10	0.50
			F	5.94	0.57
			Total	49.99	4.61

Unit Hydrograph Method – 100yr 3hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	3.51	A	20.15	2.72
FGHJ	24.4	2.81	B	1.00	0.01
Total	54.84	6.32	C	16.60	2.35
			D	1.20	0.06
			E	5.10	0.73
			F	5.94	0.84
			Total	49.99	6.71

Unit Hydrograph Method – 100yr 6hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	4.39	A	20.15	3.74
FGHJ	24.4	3.52	B	1.00	0.06
Total	54.84	7.91	C	16.60	3.29
			D	1.20	0.13
			E	5.10	1.04
			F	5.94	1.19
			Total	49.99	9.45

Q (FLOW-VOLUME) FOR EXISTING AND PROPOSED @ 100YR & 10YR: (cont'd…)

Unit Hydrograph Method – 100yr 24hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	5.48	A	20.15	5.52
FGHJ	24.4	4.39	B	1.00	0.20
Total	54.84	9.87	C	16.60	4.93
			D	1.20	0.28
			E	5.10	1.63
			F	5.94	1.81
			Total	49.99	14.37

Unit Hydrograph Method – 10yr 1hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	1.66	A	20.15	1.20
FGHJ	24.4	1.33	B	1.00	0.01
Total	54.84	2.99	C	16.60	0.87
			D	1.20	0.01
			E	5.10	0.31
			F	5.94	0.36
			Total	49.99	2.76

Unit Hydrograph Method – 10yr 3hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	1.96	A	20.15	1.68
FGHJ	24.4	1.57	B	1.00	0.01
Total	54.84	3.53	C	16.60	1.07
			D	1.20	0.01
			E	5.10	0.95
			F	5.94	0.53
			Total	49.99	3.77

Q (FLOW-VOLUME) FOR EXISTING AND PROPOSED @ 100YR & 10YR: (cont'd…)

Unit Hydrograph Method – 10yr 6hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	2.35	A	20.15	2.31
FGHJ	24.4	1.88	B	1.00	0.03
Total	54.84	4.23	C	16.60	1.44
			D	1.20	0.05
			E	5.10	0.68
			F	5.94	0.76
			Total	49.99	5.27

Unit Hydrograph Method – 10yr 24hr

Area Designation	Area (ac)	Existing/Undeveloped Vol (ac-ft)	Area Designation	Area (ac)	Routed on Pond Vol (ac-ft)
ABCDE	30.44	2.43	A	20.15	3.24
FGHJ	24.4	1.94	B	1.00	0.10
Total	54.84	4.37	C	16.60	2.26
			D	1.20	0.14
			E	5.10	0.95
			F	5.94	1.08
			Total	49.99	7.77

RATIONAL METHOD 100YR & 10YR ON-SITE:

Existing Area	Area (ac)	Q10 (cfs)	Q100 (cfs)	Developed Area	Area (ac)	Q10 (cfs)	Q100 (cfs)
eABCDE	30.44	39.30	60.28	A	20.15	33.57	52.30
eFGHJ	24.40	29.80	49.83	B	1.00	1.85	2.81
Total	54.84	69.10	110.11	C	16.60	29.40	45.40
				D	1.20	2.42	3.70
				E	5.10	9.00	13.61
				F	5.94	10.50	16.00
				Total	49.99	86.74	133.82

RATIONAL METHOD 100YR & 10YR OFF-SITE:

Existing Area	Area (ac)	Q10 (cfs)	Q100 (cfs)	Ultimate Area	Area (ac)	Q10 (cfs)	Q100 (cfs)
oABCDE	32.90	48.90	82.80	uABCDE	32.90	52.90	87.90
oFGHJ	2.90	4.20	6.40	uFGHI	3.10	4.50	6.90
oNPRKL	13.30	15.70	24.60	uNPRKJ	14.50	17.10	26.90
Total	49.10	68.80	113.80	uL	0.75	1.90	2.80
				Total	51.25	76.40	124.50

Time (ΔT) to Drain Ponds:
BMP-1, BMP-3, BMP-4 & BMP-5: ΔT=[areaPond/area/Orifice]*[2*(1+0.5)/g=32.2]^0.5*[Pdepth]^0.5
Orifice Diameter = 4 inch
BMP-2, & BMP-4a
Orifice Diameter = 2 inch

DMA	BMP/POND	Area of Pond, sf	Area Orifice, sf	Pond Depth, ft	ΔT to drain, hrs
A	1	12,932	0.087	5	28
B	2	3,190	0.022	7.5	34
C	3	18,930	0.087	6.5	47
D	4a	4,550	0.022	4.4	37
E	4	10,640	0.087	5.2	24
F	5	11,523	0.087	4	22

7.0) Off-Site Flow:

The site is located ±2.0 miles from the base of a small series of hills which are primarily composed of metamorphic rock, and over the years washed down into the valley creating a top soil with alluvial fan characteristics. This creates a condition whereby the existing water patterns are metamorphic or can change with intensity.

The majority of the flow is sheet flow over the plain, however there are cases were the flow is concentrated into small intermittent short run creeks. Over the years the Mill Creek has been stable locally.

Based on the off-site flow patterns it was determined from previous design data records, the peak flow through the site would be 309 cfs. This flow in the current bed and will be conveyed thru southern portion of the site. As the stream nears Haun Road it will transition to a shallow trapezoidal channel, having a base of 10; and 4:1 side slopes. This channel flows to the Haun Road crossings, existing 3-30" CMP arches which will be replaced with a 20ft X 4ft RCB. This would create an uninterrupted flow pattern thereby eliminating ponding at Haun Road. WSPGW analysis as to the design of this improve channel and the proposed 4ft x 20ft RCB is presented on Appendix F. Based on this analysis it was proven that the channel design and the 4ft x 20ft RCB are adequate to handle the 1rh 100yr (Unit Hydrograph Method) storm flow.

Offsite flows from areas oABCDE area collected along the west side of Sherman Road and conveyed northerly to Garbani Road. These flows will be intercepted at the southwest corner of Garbani and Sherman conveyed thru proposed storm drains along Garbani Road, and to the existing 54" RCP crossing under Garbani Road.

Offsite flows from areas oNPR will be collected in the half street improvement in Haun Road and a catch basin near the southerly property line. A storm drain will convey these flows to the Haun Road crossing just south of Garbani Road.

8.0) Conclusions and Recommendations:

The proposed storm drain system proposed for this project will accomplish the following:

1. Proposed a workable channel crossing the southern part of the project site, and convey an off-site flow of 309 cfs to the proposed 4ft by 20 ft RCB at Haun road. (Please see Appendix F, for calculations and details).

2. Regulate the flow from the proposed site to limit the storm flow to the existing 54" RCP flow design capacity (Q=133.35 cfs). This culvert is located at Ruxton Street Storm Drain Line at the adjacent neighborhood. Based on calculations presented on Appendix E, the design flow of 133.35cfs is greater than the computed flow of ±130.20 cfs.

3. Proposed a storm drain line system at Haun and Garbani roads to convey storm flows without flow impact to the downstream properties.

In addition this project will bring a complete development to the Menifee Community. For housing there will be residential apartments and condominiums. The development will also include restaurants and some retail outlets.

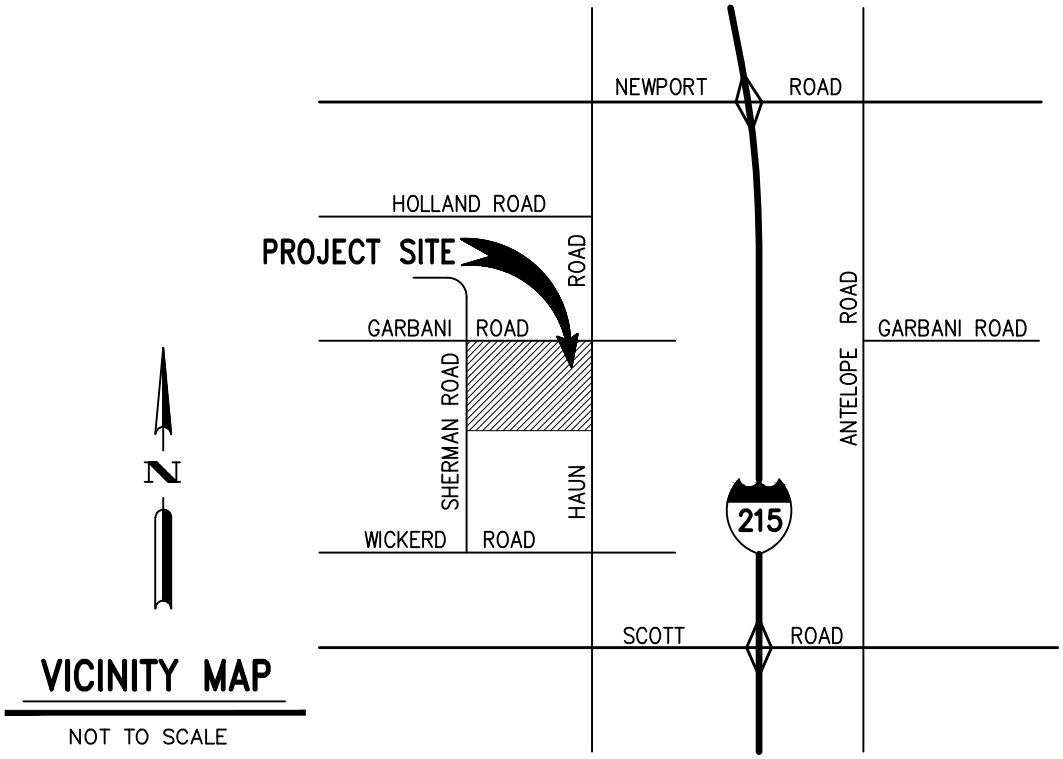
This project will improve Haun Rd., Sherman Rd., with ½ street curb and gutter assemblies. Garbani Rd. has an existing ½ street assembly. So upon completion of the project, Garbani Rd. will be a full street assembly. Those improvements allow for a better control of traffic and flow patterns.

References:

1) Federal Emergency Management Agency, Flood Insurance Rate Map Division, August 2014. Map Number 06065C2070H.
2) Riverside County Flood Control and Water Conservation District, Hydrology Manual, April 1978.
3) Joseph E. Bonadiman and Associates, INC., CIVILDESIGN, Operators Manual, copyright 1991 – 1998.
4) USACOE, Institute of Water Resources, Hydraulic Engineering Center, HEC-RES, River Analysis System, User's Manual, Version 4.1, January 2010

APPENDIX A
MAPS

Vicinity Map
FEMA – Firm Map
Soils – Hydrologic Soils Group



VICINITY MAP

NOT TO SCALE

e Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

0 500 1,000 1,500 2,000 FEET

NS PANEL 2064

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2070H

FIRM

FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 2070 OF 3805

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MENIFEE, CITY OF	060176	2070	H
RIVERSIDE COUNTY UNINCORPORATED AREAS	060245	2070	H

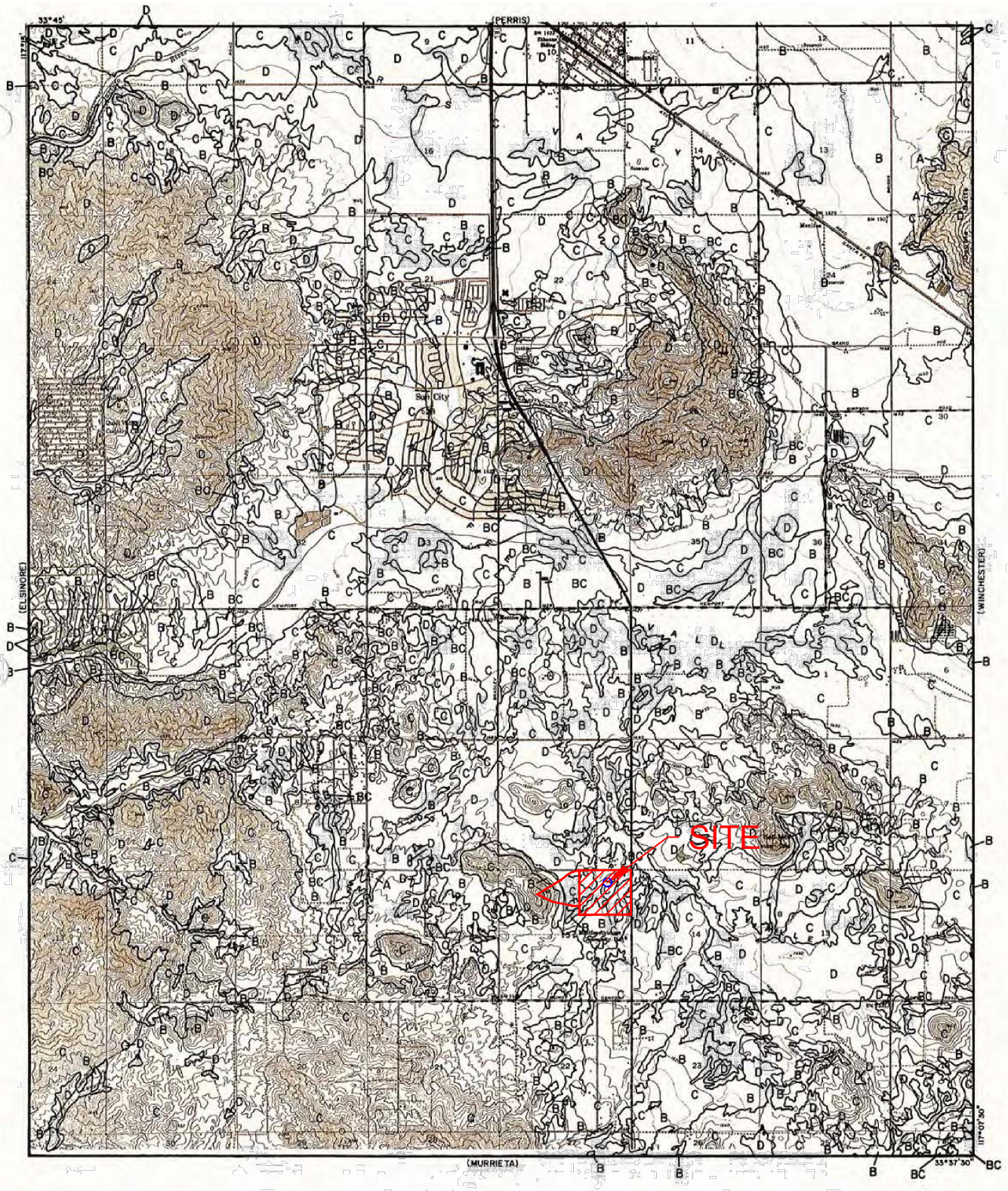
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06065C2070H

MAP REVISED
AUGUST 18, 2014

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR ROMOLAND

PLATE C-1.42

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD

HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

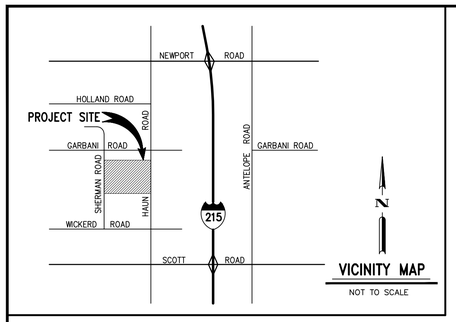
APPENDIX B – Rational Method

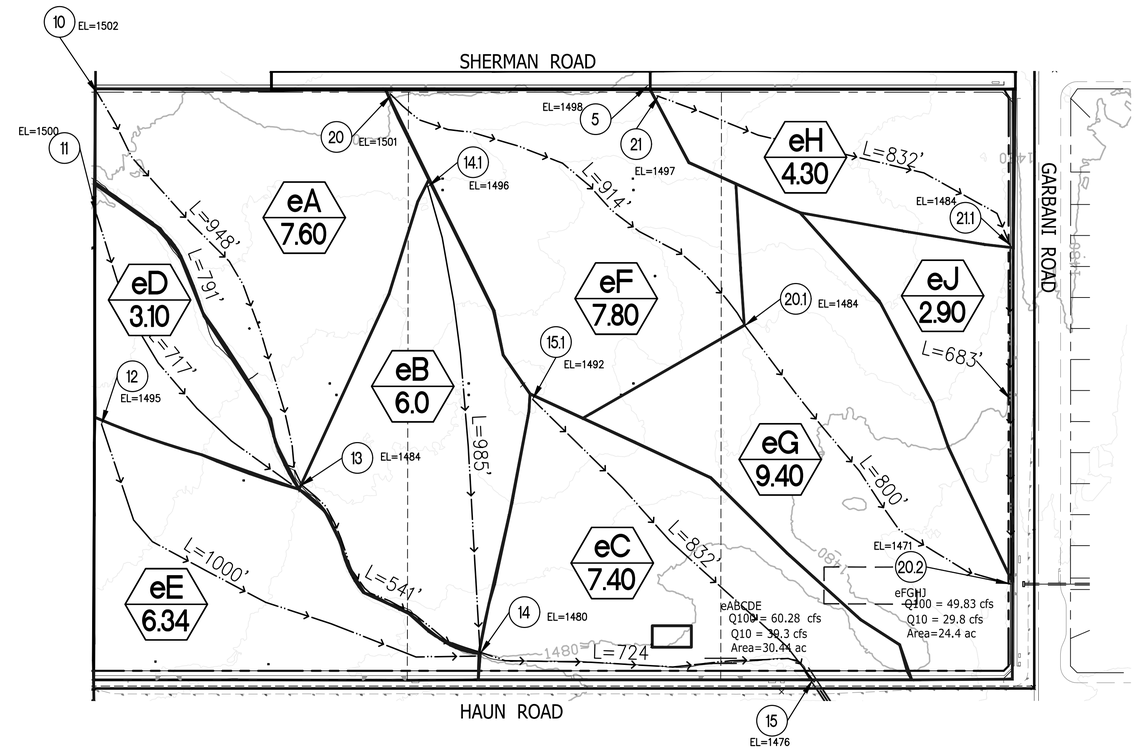
1. On-site Existing 10yr & 100yr
2. Off-site Existing 10yr & 100yr
3. On-site Proposed 10yr & 100yr

APPENDIX B.1 – Rational Method

1. On-site Existing 10yr & 100yr

EXISTING DRAINAGE MAP - RATIONAL METHOD





DRAINAGE LEGEND

SYMBOL	DEFINITION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	EXISTING DRAINAGE BOUNDARY
	DIRECTION OF EXISTING FLOW
Q100 = 10.2cfs	100 YEAR FLOW FOR AREA
Q10 = 6.2cfs	10 YEAR FLOW FOR AREA
L=762'	LENGTH OF TRAVEL
(3) EL=1431	NODE WITH ELEVATION
eA / 0.78	AREA NAME (ON-SITE EXISTING) / AREA ACRES

GRAPHIC SCALE

150 0 75 150 300 450

1 inch = 150 ft.

100 YR			
AREA DESIGNATION	AREA AC.	NODE	Q100 (CFS)
eABCDE	30.44	20.2	60.28
eFGHJ	24.40	15	49.83
TOTAL	54.84		110.11

10 YR			
AREA DESIGNATION	AREA AC.	NODE	Q10 (CFS)
eABCDE	30.44	20.2	39.30
eFGHJ	24.40	15	29.80
TOTAL	54.84		69.10

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

REVISIONS

SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:
CHRIS D. HOPPER
RCE NO. 34821
DATE
Benjie

SEAL: REGISTERED PROFESSIONAL ENGINEER CHRIS D. HOPPER No. 34821 Exp. 9/30/17 CIVIL STATE OF CALIFORNIA

SCALE:	1" =150'
DESIGN:	BAM/REK
DRAWN:	BENJIE/RGS
CHECKED:	HJK/BAM
APPROVED:	HJK/TPV
DATE:	MARCH, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH — RCE 61253 — DATE
DIRECTOR OF PUBLIC WORKS/ CITY ENGINEER — EXP. 6/30/16

RECOMMENDED BY: — DATE

CITY OF MENIFEE

EXISTING DRAINAGE MAP
MILLCREEK PROMENADE
RATIONAL METHOD 10YR & 100YR

SHEET NO. 1 OF 1

PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\EXISTING\RAT\27259-EXISTING_HYDRO_RAT.dwg 2-26-16 10:51:57 AM

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 12/07/17  File:27259RATeAE.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eABCDE - Q10 (ONSITE)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   948.000(Ft.)
Top (of initial area) elevation =  1502.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.01899  s(percent)=       1.90
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.168 min.
Rainfall intensity =      1.639(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.854
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     10.642(CFS)
```

```
Total initial stream area =        7.600(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       13.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.600(Ac.)
Runoff from this stream =     10.642(CFS)
Time of concentration =   18.17 min.
Rainfall intensity =     1.639(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       10.642     18.17            1.639
Largest stream flow has longer time of concentration
Qp =     10.642 + sum of
Qp =     10.642

Total of 1 main streams to confluence:
Flow rates before confluence point:
      10.642
Area of streams before confluence:
        7.600


Results of confluence:
Total flow rate =     10.642(CFS)
Time of concentration =    18.168 min.
Effective stream area after confluence  =      7.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   717.000(Ft.)
Top (of initial area) elevation =  1500.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.02232  s(percent)=       2.23
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.731 min.
Rainfall intensity =      1.769(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.858
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      4.702(CFS)
Total initial stream area =        3.100(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       13.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.100(Ac.)
Runoff from this stream =      4.702(CFS)
Time of concentration =   15.73 min.
Rainfall intensity =     1.769(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       10.642     18.17            1.639
2        4.702     15.73            1.769
Largest stream flow has longer time of concentration
Qp =     10.642 + sum of
         Qb         Ia/Ib
          4.702 *    0.927 =      4.357
Qp =     14.998

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.642       4.702
Area of streams before confluence:
        7.600        3.100


Results of confluence:
Total flow rate =     14.998(CFS)
Time of concentration =    18.168 min.
Effective stream area after confluence  =     10.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       14.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   0.383(Ft.), Average velocity =   2.522(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              4.00
       2             16.00              0.00
       3             30.00              0.00
       4             46.00              4.00
Manning's 'N' friction factor =   0.025
-------------------------------------------------------------------
Sub-Channel flow  =     14.998(CFS)
  '     '      flow top width =     17.063(Ft.)
  '     '    velocity=    2.522(Ft/s)
  '     '      area =      5.947(Sq.Ft)
  '     '      Froude number =     0.753

Upstream point elevation =  1484.000(Ft.)
Downstream point elevation =  1480.000(Ft.)
Flow length =   541.000(Ft.)
Travel time  =    3.58 min.
Time of concentration =   21.74 min.
```

```
Depth of flow =   0.383(Ft.)
Average velocity =   2.522(Ft/s)
Total irregular channel flow =    14.998(CFS)
Irregular channel normal depth above invert elev. =   0.383(Ft.)
Average velocity of channel(s) =   2.522(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       14.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.700(Ac.)
Runoff from this stream =     14.998(CFS)
Time of concentration =   21.74 min.
Rainfall intensity =     1.490(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.998     21.74            1.490
Largest stream flow has longer time of concentration
Qp =     14.998 + sum of
Qp =     14.998

Total of 1 main streams to confluence:
Flow rates before confluence point:
      14.998
Area of streams before confluence:
       10.700


Results of confluence:
Total flow rate =     14.998(CFS)
Time of concentration =    21.743 min.
Effective stream area after confluence  =     10.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  1495.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =    15.000(Ft.)
Slope =    0.01500  s(percent)=       1.50
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   19.456 min.
Rainfall intensity =      1.580(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.853
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      8.545(CFS)
Total initial stream area =        6.340(Ac.)
```

```
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.340(Ac.)
Runoff from this stream =      8.545(CFS)
Time of concentration =   19.46 min.
Rainfall intensity =     1.580(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.998     21.74           1.490
2        8.545     19.46           1.580
Largest stream flow has longer time of concentration
Qp =     14.998 + sum of
         Qb         Ia/Ib
          8.545 *    0.943 =      8.056
Qp =     23.054

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.998       8.545
Area of streams before confluence:
       10.700        6.340


Results of confluence:
Total flow rate =     23.054(CFS)
Time of concentration =    21.743 min.
Effective stream area after confluence  =     17.040(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.100 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   985.000(Ft.)
Top (of initial area) elevation =  1496.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.01624  s(percent)=       1.62
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   19.033 min.
Rainfall intensity =      1.599(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.853
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      8.186(CFS)
Total initial stream area =        6.000(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.100 to Point/Station       14.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      6.000(Ac.)
Runoff from this stream =      8.186(CFS)
Time of concentration =   19.03 min.
Rainfall intensity =     1.599(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.998     21.74            1.490
2        8.545     19.46            1.580
3        8.186     19.03            1.599
Largest stream flow has longer time of concentration
Qp =     14.998 + sum of
         Qb         Ia/Ib
          8.545 *    0.943 =      8.056
         Qb         Ia/Ib
          8.186 *    0.932 =      7.629
Qp =     30.683

Total of 3 main streams to confluence:
Flow rates before confluence point:
      14.998       8.545       8.186
Area of streams before confluence:
       10.700        6.340        6.000


Results of confluence:
Total flow rate =     30.683(CFS)
Time of concentration =    21.743 min.
Effective stream area after confluence  =     23.040(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   0.631(Ft.), Average velocity =   2.941(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              4.00
       2             16.00              0.00
       3             30.00              0.00
       4             46.00              4.00
Manning's 'N' friction factor =   0.025
-------------------------------------------------------------------
Sub-Channel flow  =     30.683(CFS)
  '     '     flow top width =     19.050(Ft.)
  '     '    velocity=    2.941(Ft/s)
  '     '     area =     10.432(Sq.Ft)
  '     '     Froude number =     0.700
```

```
Upstream point elevation =  1480.000(Ft.)
Downstream point elevation =  1476.000(Ft.)
Flow length =   724.000(Ft.)
Travel time  =    4.10 min.
Time of concentration =   25.85 min.
Depth of flow =   0.631(Ft.)
Average velocity =   2.941(Ft/s)
Total irregular channel flow =    30.683(CFS)
Irregular channel normal depth above invert elev. =   0.631(Ft.)
Average velocity of channel(s) =   2.941(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     23.040(Ac.)
Runoff from this stream =     30.683(CFS)
Time of concentration =   25.85 min.
Rainfall intensity =     1.359(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       30.683     25.85            1.359
Largest stream flow has longer time of concentration
Qp =     30.683 + sum of
Qp =     30.683

Total of 1 main streams to confluence:
Flow rates before confluence point:
      30.683
Area of streams before confluence:
       23.040


Results of confluence:
Total flow rate =     30.683(CFS)
Time of concentration =    25.846 min.
Effective stream area after confluence  =     23.040(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.100 to Point/Station       15.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   832.000(Ft.)
Top (of initial area) elevation =  1492.000(Ft.)
Bottom (of initial area) elevation =  1476.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.01923  s(percent)=       1.92
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.200 min.
Rainfall intensity =      1.687(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.856
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
```

```
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     10.682(CFS)
Total initial stream area =        7.400(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.400(Ac.)
Runoff from this stream =     10.682(CFS)
Time of concentration =   17.20 min.
Rainfall intensity =     1.687(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       30.683     25.85           1.359
2       10.682     17.20           1.687
Largest stream flow has longer time of concentration
Qp =     30.683 + sum of
         Qb         Ia/Ib
         10.682 *    0.806 =      8.608
Qp =     39.291

Total of 2 main streams to confluence:
Flow rates before confluence point:
      30.683      10.682
Area of streams before confluence:
       23.040        7.400


Results of confluence:
Total flow rate =     39.291(CFS)
Time of concentration =    25.846 min.
Effective stream area after confluence  =     30.440(Ac.)
End of computations, total study area =           30.44 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  84.8
```

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/06/18  File:27259RATeFJ.out
------------------------------------------------------------------------
  PM #13523
MILL CREEK PROMENADE
AREA eFGHJ - Q10 (ONSITE)

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

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Program License Serial Number 4066

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Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       20.000 to Point/Station       20.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   914.000(Ft.)
Top (of initial area) elevation =  1501.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    17.000(Ft.)
Slope =    0.01860  s(percent)=       1.86
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.979 min.
Rainfall intensity =      1.648(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.786
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  84.75
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Initial subarea runoff =     10.098(CFS)
Total initial stream area =        7.800(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       20.100 to Point/Station       20.200
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1484.000(Ft.)
End of natural channel elevation =   1471.000(Ft.)
Length of natural channel  =   800.000(Ft.)
Estimated mean flow rate at midpoint of channel =     16.182(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.61(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0163
Corrected/adjusted channel slope =  0.0163
Travel time =    3.69 min.     TC =   21.67  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.775
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  84.75
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.492(In/Hr) for a    10.0 year storm
Subarea runoff =     10.878(CFS) for      9.400(Ac.)
Total runoff =     20.975(CFS)   Total area =      17.200(Ac.)


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Process from Point/Station       20.100 to Point/Station       20.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     17.200(Ac.)
Runoff from this stream =     20.975(CFS)
Time of concentration =   21.67 min.
Rainfall intensity =     1.492(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.975     21.67                 1.492
Largest stream flow has longer time of concentration
Qp =     20.975 + sum of
Qp =     20.975

Total of 1 streams to confluence:
Flow rates before confluence point:
      20.975
```

```
Area of streams before confluence:
       17.200
Results of confluence:
Total flow rate =     20.975(CFS)
Time of concentration =    21.673 min.
Effective stream area after confluence =     17.200(Ac.)


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Process from Point/Station       21.000 to Point/Station       21.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   832.000(Ft.)
Top (of initial area) elevation =  1497.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.01563  s(percent)=       1.56
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.929 min.
Rainfall intensity =      1.650(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.786
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  84.75
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.576(CFS)
Total initial stream area =        4.300(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       21.100 to Point/Station       20.200
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      7.329(CFS)
Depth of flow =   0.628(Ft.), Average velocity =   3.715(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
-------------------------------------------------------------
Sub-Channel flow  =      7.329(CFS)
  '     '      flow top width =      6.281(Ft.)
  '     '    velocity=    3.715(Ft/s)
  '     '      area =      1.973(Sq.Ft)
  '     '      Froude number =     1.168

Upstream point elevation =  1484.000(Ft.)
Downstream point elevation =  1471.000(Ft.)
Flow length =   683.000(Ft.)
Travel time  =    3.06 min.
Time of concentration =   20.99 min.
Depth of flow =   0.628(Ft.)
Average velocity =   3.715(Ft/s)
Total irregular channel flow =     7.329(CFS)
Irregular channel normal depth above invert elev. =   0.628(Ft.)
```

```
Average velocity of channel(s) =   3.715(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.777
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  84.75
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.518(In/Hr) for a    10.0 year storm
Subarea runoff =      3.421(CFS) for      2.900(Ac.)
Total runoff =      8.997(CFS)   Total area =       7.200(Ac.)
Depth of flow =   0.678(Ft.), Average velocity =   3.911(Ft/s)


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Process from Point/Station       20.200 to Point/Station       20.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.200(Ac.)
Runoff from this stream =      8.997(CFS)
Time of concentration =   20.99 min.
Rainfall intensity =     1.518(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.997     20.99                 1.518
Largest stream flow has longer time of concentration
Qp =      8.997 + sum of
Qp =      8.997

Total of 1 streams to confluence:
Flow rates before confluence point:
       8.997
Area of streams before confluence:
        7.200
Results of confluence:
Total flow rate =      8.997(CFS)
Time of concentration =    20.993 min.
Effective stream area after confluence =      7.200(Ac.)
End of computations, total study area =           24.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  84.7
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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 12/07/17  File:27259RATeAE.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eABCDE - Q100 (ONSITE)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

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Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       10.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   948.000(Ft.)
Top (of initial area) elevation =  1502.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.01899  s(percent)=       1.90
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.168 min.
Rainfall intensity =      2.449(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     16.172(CFS)
```

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Total initial stream area =        7.600(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       10.000 to Point/Station       13.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      7.600(Ac.)
Runoff from this stream =     16.172(CFS)
Time of concentration =   18.17 min.
Rainfall intensity =     2.449(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.172     18.17           2.449
Largest stream flow has longer time of concentration
Qp =     16.172 + sum of
Qp =     16.172

Total of 1 main streams to confluence:
Flow rates before confluence point:
      16.172
Area of streams before confluence:
        7.600


Results of confluence:
Total flow rate =     16.172(CFS)
Time of concentration =    18.168 min.
Effective stream area after confluence  =      7.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   717.000(Ft.)
Top (of initial area) elevation =  1500.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.02232  s(percent)=       2.23
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.731 min.
Rainfall intensity =      2.643(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      7.138(CFS)
Total initial stream area =        3.100(Ac.)
Pervious area fraction = 1.000
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Process from Point/Station       11.000 to Point/Station       13.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.100(Ac.)
Runoff from this stream =      7.138(CFS)
Time of concentration =   15.73 min.
Rainfall intensity =     2.643(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.172     18.17            2.449
2        7.138     15.73            2.643
Largest stream flow has longer time of concentration
Qp =     16.172 + sum of
         Qb         Ia/Ib
          7.138 *    0.927 =      6.613
Qp =     22.785

Total of 2 main streams to confluence:
Flow rates before confluence point:
      16.172       7.138
Area of streams before confluence:
        7.600        3.100


Results of confluence:
Total flow rate =     22.785(CFS)
Time of concentration =    18.168 min.
Effective stream area after confluence  =     10.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       14.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   0.489(Ft.), Average velocity =   2.923(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              4.00
       2             16.00              0.00
       3             30.00              0.00
       4             46.00              4.00
Manning's 'N' friction factor =   0.025
-------------------------------------------------------------------
Sub-Channel flow  =     22.785(CFS)
  '     '      flow top width =     17.909(Ft.)
  '     '    velocity=    2.923(Ft/s)
  '     '      area =      7.796(Sq.Ft)
  '     '      Froude number =     0.781

Upstream point elevation =  1484.000(Ft.)
Downstream point elevation =  1480.000(Ft.)
Flow length =   541.000(Ft.)
Travel time  =    3.09 min.
Time of concentration =   21.25 min.
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Depth of flow =   0.489(Ft.)
Average velocity =   2.923(Ft/s)
Total irregular channel flow =    22.785(CFS)
Irregular channel normal depth above invert elev. =   0.489(Ft.)
Average velocity of channel(s) =   2.923(Ft/s)


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Process from Point/Station       13.000 to Point/Station       14.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.700(Ac.)
Runoff from this stream =     22.785(CFS)
Time of concentration =   21.25 min.
Rainfall intensity =     2.253(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       22.785     21.25           2.253
Largest stream flow has longer time of concentration
Qp =     22.785 + sum of
Qp =     22.785

Total of 1 main streams to confluence:
Flow rates before confluence point:
      22.785
Area of streams before confluence:
       10.700


Results of confluence:
Total flow rate =     22.785(CFS)
Time of concentration =    21.253 min.
Effective stream area after confluence  =     10.700(Ac.)


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Process from Point/Station       12.000 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  1495.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =    15.000(Ft.)
Slope =    0.01500  s(percent)=       1.50
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   19.456 min.
Rainfall intensity =      2.361(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     12.993(CFS)
Total initial stream area =        6.340(Ac.)
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Pervious area fraction = 1.000


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Process from Point/Station       12.000 to Point/Station       14.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.340(Ac.)
Runoff from this stream =     12.993(CFS)
Time of concentration =   19.46 min.
Rainfall intensity =     2.361(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       22.785     21.25           2.253
2       12.993     19.46           2.361
Largest stream flow has longer time of concentration
Qp =     22.785 + sum of
         Qb         Ia/Ib
         12.993 *    0.954 =     12.399
Qp =     35.184

Total of 2 main streams to confluence:
Flow rates before confluence point:
      22.785      12.993
Area of streams before confluence:
       10.700        6.340


Results of confluence:
Total flow rate =     35.184(CFS)
Time of concentration =    21.253 min.
Effective stream area after confluence  =     17.040(Ac.)


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Process from Point/Station       14.100 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   985.000(Ft.)
Top (of initial area) elevation =  1496.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.01624  s(percent)=       1.62
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   19.033 min.
Rainfall intensity =      2.389(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     12.446(CFS)
Total initial stream area =        6.000(Ac.)
Pervious area fraction = 1.000
```

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Process from Point/Station       14.100 to Point/Station       14.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      6.000(Ac.)
Runoff from this stream =     12.446(CFS)
Time of concentration =   19.03 min.
Rainfall intensity =     2.389(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       22.785     21.25            2.253
2       12.993     19.46            2.361
3       12.446     19.03            2.389
Largest stream flow has longer time of concentration
Qp =     22.785 + sum of
         Qb         Ia/Ib
         12.993 *    0.954 =     12.399
         Qb         Ia/Ib
         12.446 *    0.943 =     11.739
Qp =     46.923

Total of 3 main streams to confluence:
Flow rates before confluence point:
      22.785      12.993      12.446
Area of streams before confluence:
       10.700        6.340        6.000


Results of confluence:
Total flow rate =     46.923(CFS)
Time of concentration =    21.253 min.
Effective stream area after confluence  =     23.040(Ac.)


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Process from Point/Station       14.000 to Point/Station       15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   0.805(Ft.), Average velocity =   3.387(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              4.00
       2             16.00              0.00
       3             30.00              0.00
       4             46.00              4.00
Manning's 'N' friction factor =   0.025
-------------------------------------------------------------------
Sub-Channel flow  =     46.923(CFS)
  '     '     flow top width =     20.436(Ft.)
  '     '    velocity=    3.387(Ft/s)
  '     '     area =     13.852(Sq.Ft)
  '     '     Froude number =     0.725
```

```
Upstream point elevation =  1480.000(Ft.)
Downstream point elevation =  1476.000(Ft.)
Flow length =   724.000(Ft.)
Travel time  =    3.56 min.
Time of concentration =   24.82 min.
Depth of flow =   0.805(Ft.)
Average velocity =   3.387(Ft/s)
Total irregular channel flow =    46.923(CFS)
Irregular channel normal depth above invert elev. =   0.805(Ft.)
Average velocity of channel(s) =   3.387(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     23.040(Ac.)
Runoff from this stream =     46.923(CFS)
Time of concentration =   24.82 min.
Rainfall intensity =     2.076(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       46.923     24.82            2.076
Largest stream flow has longer time of concentration
Qp =     46.923 + sum of
Qp =     46.923

Total of 1 main streams to confluence:
Flow rates before confluence point:
      46.923
Area of streams before confluence:
       23.040


Results of confluence:
Total flow rate =     46.923(CFS)
Time of concentration =    24.815 min.
Effective stream area after confluence  =     23.040(Ac.)


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Process from Point/Station       15.100 to Point/Station       15.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   832.000(Ft.)
Top (of initial area) elevation =  1492.000(Ft.)
Bottom (of initial area) elevation =  1476.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.01923  s(percent)=       1.92
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.200 min.
Rainfall intensity =      2.521(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
```

```
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     16.226(CFS)
Total initial stream area =        7.400(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      7.400(Ac.)
Runoff from this stream =     16.226(CFS)
Time of concentration =   17.20 min.
Rainfall intensity =     2.521(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       46.923     24.82            2.076
2       16.226     17.20            2.521
Largest stream flow has longer time of concentration
Qp =     46.923 + sum of
         Qb         Ia/Ib
         16.226 *    0.823 =     13.361
Qp =     60.284

Total of 2 main streams to confluence:
Flow rates before confluence point:
      46.923      16.226
Area of streams before confluence:
       23.040        7.400


Results of confluence:
Total flow rate =     60.284(CFS)
Time of concentration =    24.815 min.
Effective stream area after confluence  =     30.440(Ac.)
End of computations, total study area =           30.44 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  84.8
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 12/07/17 File:27259RATeFJ.out

PM #13523
MILL CREEK PROMENADE
AREA eFGHJ - Q100 (ONSITE) EXISTING

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4066

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.300(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 20.000 to Point/Station 20.100
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 914.000(Ft.)
Top (of initial area) elevation = 1501.000(Ft.)
Bottom (of initial area) elevation = 1484.000(Ft.)
Difference in elevation = 17.000(Ft.)
Slope = 0.01860 s(percent)= 1.86
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.979 min.
Rainfall intensity = 2.462(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3) = 93.85
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 16.693(CFS)
Total initial stream area = 7.800(Ac.)
Pervious area fraction = 1.000

++
Process from Point/Station 20.100 to Point/Station 20.200
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```
Top of natural channel elevation =   1484.000(Ft.)
End of natural channel elevation =   1471.000(Ft.)
Length of natural channel  =   800.000(Ft.)
Estimated mean flow rate at midpoint of channel =     26.752(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.14(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0163
Corrected/adjusted channel slope =  0.0163
Travel time =    3.22 min.     TC =   21.20  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.866
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.256(In/Hr) for a   100.0 year storm
Subarea runoff =     18.376(CFS) for      9.400(Ac.)
Total runoff =     35.069(CFS)        Total area =      17.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.100 to Point/Station       20.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     17.200(Ac.)
Runoff from this stream =     35.069(CFS)
Time of concentration =   21.20 min.
Rainfall intensity =     2.256(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       35.069     21.20                 2.256
Largest stream flow has longer time of concentration
Qp =     35.069 + sum of
Qp =     35.069

Total of 1 streams to confluence:
Flow rates before confluence point:
      35.069
Area of streams before confluence:
       17.200
Results of confluence:
Total flow rate =     35.069(CFS)
Time of concentration =    21.203 min.
Effective stream area after confluence =     17.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       21.000 to Point/Station       21.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   832.000(Ft.)
Top (of initial area) elevation =  1497.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.01563  s(percent)=       1.56
```

```
Area of streams before confluence:
       17.200
Results of confluence:
Total flow rate =     35.069(CFS)
Time of concentration =    21.203 min.
Effective stream area after confluence =     17.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       21.000 to Point/Station       21.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   832.000(Ft.)
Top (of initial area) elevation =  1497.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.01563  s(percent)=       1.56
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.929 min.
Rainfall intensity =      2.466(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      9.216(CFS)
Total initial stream area =        4.300(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       21.100 to Point/Station       20.200
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.123(CFS)
Depth of flow =   0.759(Ft.), Average velocity =   4.213(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
-------------------------------------------------------------
Sub-Channel flow  =     12.123(CFS)
  '     '      flow top width =      7.586(Ft.)
  '     '    velocity=    4.213(Ft/s)
  '     '      area =      2.877(Sq.Ft)
  '     '      Froude number =     1.206

Upstream point elevation =  1484.000(Ft.)
Downstream point elevation =  1471.000(Ft.)
Flow length =   683.000(Ft.)
Travel time  =    2.70 min.
Time of concentration =   20.63 min.
Depth of flow =   0.759(Ft.)
Average velocity =   4.213(Ft/s)
Total irregular channel flow =    12.123(CFS)
Irregular channel normal depth above invert elev. =   0.759(Ft.)
```

```
Average velocity of channel(s) =   4.213(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.867
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  93.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.289(In/Hr) for a   100.0 year storm
Subarea runoff =      5.755(CFS) for      2.900(Ac.)
Total runoff =     14.971(CFS)   Total area =       7.200(Ac.)
Depth of flow =   0.821(Ft.), Average velocity =   4.442(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.200 to Point/Station       20.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.200(Ac.)
Runoff from this stream =     14.971(CFS)
Time of concentration =   20.63 min.
Rainfall intensity =     2.289(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)

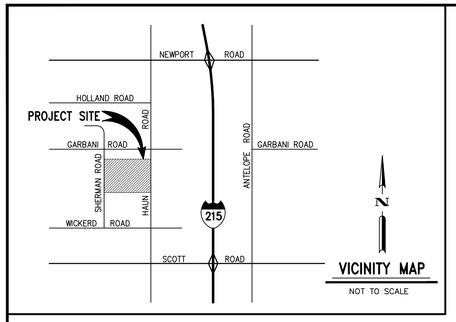

1       14.971     20.63                 2.289
Largest stream flow has longer time of concentration
Qp =     14.971 + sum of
Qp =     14.971

Total of 1 streams to confluence:
Flow rates before confluence point:
      14.971
Area of streams before confluence:
        7.200
Results of confluence:
Total flow rate =     14.971(CFS)
Time of concentration =    20.631 min.
Effective stream area after confluence =      7.200(Ac.)
End of computations, total study area =           24.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  84.7
```

APPENDIX B.2 – Rational Method
2. Off-site Existing 10yr & 100yr

EXISTING DRAINAGE MAP - RATIONAL METHOD



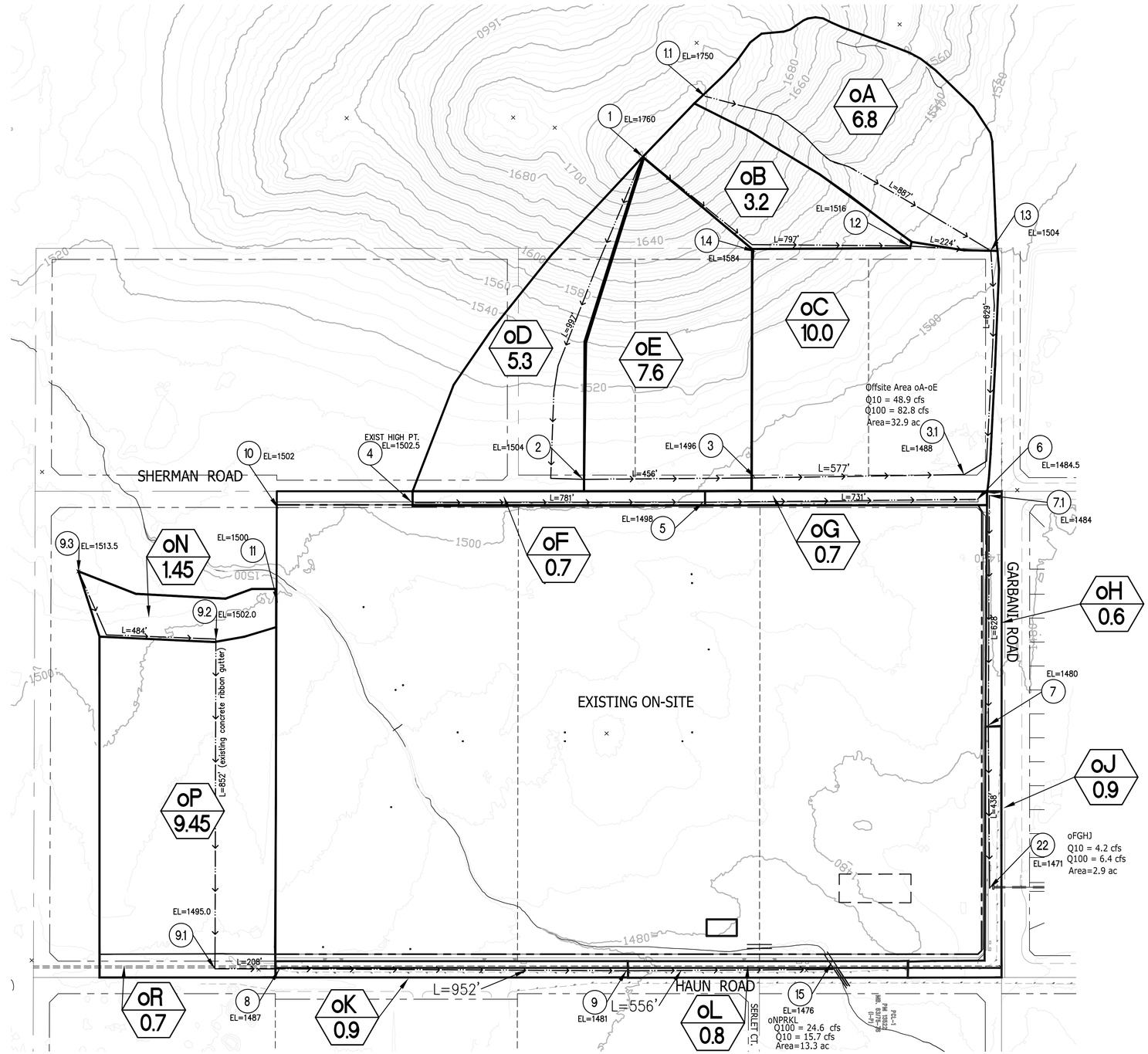
DRAINAGE LEGEND

SYMBOL	DEFINITION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	EXISTING DRAINAGE BOUNDARY
	DIRECTION OF FLOW
Q100 = 10.2cfs	100 YEAR FLOW FOR AREA
Q10 = 6.2cfs	10 YEAR FLOW FOR AREA
L=762'	LENGTH OF TRAVEL
(3) EL=1431	NODE WITH ELEVATION
oA / 0.78	AREA NAME (OFF-SIITE EXISTING) / AREA ACRES

100 YR			
AREA DESIGNATION	AREA AC.	NODE	Q100 (CFS)
oABCDE	32.90	3.10	82.80
oFGHJ	2.90	22	6.40
oNPRKL	13.30	15	24.60
TOTAL	49.10		113.80

10 YR			
AREA DESIGNATION	AREA AC.	NODE	Q10 (CFS)
oABCDE	32.90	3.10	48.90
oFGHJ	2.90	22	4.20
oNPRKL	13.30	15	24.60
TOTAL	49.10		113.80

GRAPHIC SCALE
150 0 75 150 300 450
1 inch = 150 ft.



Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

REVISIONS				
SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:
CHRIS D. HOPPER
RCE NO. 34821
DATE
Benjie

SEAL: REGISTERED PROFESSIONAL ENGINEER CHRIS D. HOPPER No. 34821 Exp. 9/30/17 CIVIL STATE OF CALIFORNIA

SCALE:	1" =150'
DESIGN:	BAM/REK
DRAWN:	BENJIE/RGS
CHECKED:	HJK/BAM
APPROVED:	HJK/TPV
DATE:	MARCH, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH — RCE 61253 — DATE
DIRECTOR OF PUBLIC WORKS/ CITY ENGINEER — EXP. 6/30/16

RECOMMENDED BY: — DATE

CITY OF MENIFEE

EXISTING DRAINAGE MAP - OFFSITE
MILLCREEK PROMENADE
RATIONAL METHOD 10YR & 100YR

SHEET NO. 1 OF 1

PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\EXISTING\RAT\27259-EXISTING_HYDRO_RAT-OFFSITE.dwg 2-26-18 02:56:09 PM

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/07/18  File:27259RATOFFoAE.out
------------------------------------------------------------------------
 PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oABCDE - Q10

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   887.000(Ft.)
Top (of initial area) elevation =  1750.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   246.000(Ft.)
Slope =    0.27734  s(percent)=      27.73
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.348 min.
Rainfall intensity =      2.208(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Initial subarea runoff =     11.934(CFS)
Total initial stream area =        6.800(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.800(Ac.)
Runoff from this stream =     11.934(CFS)
Time of concentration =   10.35 min.
Rainfall intensity =     2.208(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.934     10.35           2.208
Largest stream flow has longer time of concentration
Qp =     11.934 + sum of
Qp =     11.934

Total of 1 main streams to confluence:
Flow rates before confluence point:
      11.934
Area of streams before confluence:
        6.800


Results of confluence:
Total flow rate =     11.934(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =      6.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        1.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   797.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =  1516.000(Ft.)
Difference in elevation =   244.000(Ft.)
Slope =    0.30615  s(percent)=      30.61
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.720 min.
Rainfall intensity =      2.283(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.798
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.827(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.200 to Point/Station       1.300
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1516.000(Ft.)
End of natural channel elevation =   1504.000(Ft.)
Length of natural channel  =   224.000(Ft.)
Estimated mean flow rate at midpoint of channel =      5.827(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
 Velocity = 5.48(q^.33)(slope^.492)
Velocity using mean channel flow =   2.32(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0536
Corrected/adjusted channel slope =  0.0536
Travel time =    1.61 min.     TC =   11.33  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.790
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.105(In/Hr) for a    10.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      5.827(CFS)   Total area =       3.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.200 to Point/Station       1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      5.827(CFS)
Time of concentration =   11.33 min.
Rainfall intensity =     2.105(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.934     10.35            2.208
2        5.827     11.33            2.105
Largest stream flow has longer or shorter time of concentration
Qp =     11.934 + sum of
         Qa          Tb/Ta
          5.827 *    0.914 =      5.323
Qp =     17.257

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.934       5.827
```

```
Area of streams before confluence:
        6.800        3.200


Results of confluence:
Total flow rate =     17.257(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =     10.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1504.000(Ft.)
End of natural channel elevation =   1488.000(Ft.)
Length of natural channel  =   629.000(Ft.)
Estimated mean flow rate at midpoint of channel =     25.886(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.13(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =    2.04 min.     TC =   12.39  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.785
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.007(In/Hr) for a    10.0 year storm
Subarea runoff =     15.765(CFS) for     10.000(Ac.)
Total runoff =     33.022(CFS)   Total area =      20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     20.000(Ac.)
Runoff from this stream =     33.022(CFS)
Time of concentration =   12.39 min.
Rainfall intensity =     2.007(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       33.022     12.39           2.007
Largest stream flow has longer time of concentration
```

```
Qp =     33.022 + sum of
Qp =     33.022

Total of 1 main streams to confluence:
Flow rates before confluence point:
      33.022
Area of streams before confluence:
       20.000


Results of confluence:
Total flow rate =     33.022(CFS)
Time of concentration =    12.392 min.
Effective stream area after confluence  =     20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   997.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   256.000(Ft.)
Slope =    0.25677  s(percent)=      25.68
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.011 min.
Rainfall intensity =      2.137(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.792
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      8.965(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.300(Ac.)
Runoff from this stream =      8.965(CFS)
Time of concentration =   11.01 min.
Rainfall intensity =     2.137(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.965     11.01                 2.137
Largest stream flow has longer time of concentration
Qp =      8.965 + sum of
Qp =      8.965

Total of 1 streams to confluence:
Flow rates before confluence point:
```

```
       8.965
Area of streams before confluence:
        5.300
Results of confluence:
Total flow rate =      8.965(CFS)
Time of concentration =    11.011 min.
Effective stream area after confluence =      5.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        2.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     14.195(CFS)
Depth of flow =   0.817(Ft.), Average velocity =   4.251(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     14.195(CFS)
  '     '     flow top width =      8.172(Ft.)
  '     '    velocity=    4.251(Ft/s)
  '     '     area =      3.339(Sq.Ft)
  '     '     Froude number =     1.172

Upstream point elevation =  1504.000(Ft.)
Downstream point elevation =  1496.000(Ft.)
Flow length =   456.000(Ft.)
Travel time  =    1.79 min.
Time of concentration =   12.80 min.
Depth of flow =   0.817(Ft.)
Average velocity =   4.251(Ft/s)
Total irregular channel flow =    14.195(CFS)
Irregular channel normal depth above invert elev. =   0.817(Ft.)
Average velocity of channel(s) =   4.251(Ft/s)
 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.692
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      1.973(In/Hr) for a    10.0 year storm
Subarea runoff =     10.381(CFS) for      7.600(Ac.)
Total runoff =     19.345(CFS)   Total area =      12.900(Ac.)
Depth of flow =   0.918(Ft.), Average velocity =   4.593(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   0.959(Ft.), Average velocity =   4.205(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
```

```
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
-----------------------------------------------------------------
Sub-Channel flow  =     19.345(CFS)
  '     '     flow top width =      9.592(Ft.)
  '     '    velocity=    4.205(Ft/s)
  '     '     area =      4.600(Sq.Ft)
  '     '     Froude number =     1.070

Upstream point elevation =  1496.000(Ft.)
Downstream point elevation =  1488.000(Ft.)
Flow length =   577.000(Ft.)
Travel time  =    2.29 min.
Time of concentration =   15.09 min.
Depth of flow =   0.959(Ft.)
Average velocity =   4.205(Ft/s)
Total irregular channel flow =    19.345(CFS)
Irregular channel normal depth above invert elev. =   0.959(Ft.)
Average velocity of channel(s) =   4.205(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     12.900(Ac.)
Runoff from this stream =     19.345(CFS)
Time of concentration =   15.09 min.
Rainfall intensity =     1.808(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)

1       33.022     12.39            2.007
2       19.345     15.09            1.808
Largest stream flow has longer or shorter time of concentration
Qp =     33.022 + sum of
         Qa           Tb/Ta
         19.345 *    0.821 =     15.891
Qp =     48.913

Total of 2 main streams to confluence:
Flow rates before confluence point:
      33.022      19.345
Area of streams before confluence:
       20.000       12.900

Results of confluence:
Total flow rate =     48.913(CFS)
Time of concentration =    12.392 min.
Effective stream area after confluence  =     32.900(Ac.)
End of computations, total study area =           32.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.954
Area averaged RI index number =  77.5
```

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/07/18  File:27259RAToFGHJ.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oFGHJ - Q10

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   781.000(Ft.)
Top (of initial area) elevation =  1502.500(Ft.)
Bottom (of initial area) elevation =  1498.000(Ft.)
Difference in elevation =     4.500(Ft.)
Slope =    0.00576  s(percent)=       0.58
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.080 min.
Rainfall intensity =      2.034(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

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Initial subarea runoff =      1.251(CFS)
Total initial stream area =        0.700(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      1.800(CFS)
Depth of flow =   0.372(Ft.), Average velocity =   2.599(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.40
       2             20.00              1.00
       3             25.00              0.00
       4             30.00              1.00
       5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =      1.800(CFS)
  '     '      flow top width =      3.722(Ft.)
  '     '    velocity=    2.599(Ft/s)
  '     '      area =      0.693(Sq.Ft)
  '     '      Froude number =     1.062

Upstream point elevation =  1498.000(Ft.)
Downstream point elevation =  1484.500(Ft.)
Flow length =   731.000(Ft.)
Travel time  =    4.69 min.
Time of concentration =   16.77 min.
Depth of flow =   0.372(Ft.)
Average velocity =   2.599(Ft/s)
Total irregular channel flow =     1.800(CFS)
Irregular channel normal depth above invert elev. =   0.372(Ft.)
Average velocity of channel(s) =   2.599(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.710(In/Hr) for a    10.0 year storm
Subarea runoff =      1.048(CFS) for      0.700(Ac.)
Total runoff =      2.298(CFS)   Total area =       1.400(Ac.)
Depth of flow =   0.408(Ft.), Average velocity =   2.762(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.100 to Point/Station        7.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      2.711(CFS)
Depth of flow =   0.530(Ft.), Average velocity =   1.931(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
```

```
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =      2.711(CFS)
  '     '     flow top width =      5.298(Ft.)
  '     '    velocity=    1.931(Ft/s)
  '     '     area =      1.404(Sq.Ft)
  '     '     Froude number =     0.661

Upstream point elevation =  1484.000(Ft.)
Downstream point elevation =  1480.000(Ft.)
Flow length =   628.000(Ft.)
Travel time  =    5.42 min.
Time of concentration =   22.19 min.
Depth of flow =   0.530(Ft.)
Average velocity =   1.931(Ft/s)
Total irregular channel flow =     2.711(CFS)
Irregular channel normal depth above invert elev. =   0.530(Ft.)
Average velocity of channel(s) =   1.931(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.474(In/Hr) for a    10.0 year storm
Subarea runoff =      0.772(CFS) for      0.600(Ac.)
Total runoff =      3.070(CFS)   Total area =       2.000(Ac.)
Depth of flow =   0.555(Ft.), Average velocity =   1.992(Ft/s)


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Process from Point/Station        7.000 to Point/Station       22.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      3.654(CFS)
Depth of flow =   0.476(Ft.), Average velocity =   3.229(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =      3.654(CFS)
  '     '     flow top width =      4.758(Ft.)
  '     '    velocity=    3.229(Ft/s)
  '     '     area =      1.132(Sq.Ft)
  '     '     Froude number =     1.167

Upstream point elevation =  1480.000(Ft.)
Downstream point elevation =  1471.000(Ft.)
```

```
Flow length =   438.000(Ft.)
Travel time  =    2.26 min.
Time of concentration =   24.45 min.
Depth of flow =   0.476(Ft.)
Average velocity =   3.229(Ft/s)
Total irregular channel flow =     3.654(CFS)
Irregular channel normal depth above invert elev. =   0.476(Ft.)
Average velocity of channel(s) =   3.229(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.400(In/Hr) for a    10.0 year storm
Subarea runoff =      1.098(CFS) for      0.900(Ac.)
Total runoff =      4.168(CFS)   Total area =       2.900(Ac.)
Depth of flow =   0.500(Ft.), Average velocity =   3.337(Ft/s)
End of computations, total study area =            2.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/06/18  File:27259eRAToNPRKL.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oNPRKL - Q10
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.300 to Point/Station        9.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   484.000(Ft.)
Top (of initial area) elevation =  1513.500(Ft.)
Bottom (of initial area) elevation =  1502.000(Ft.)
Difference in elevation =    11.500(Ft.)
Slope =    0.02376  s(percent)=       2.38
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.784 min.
Rainfall intensity =      1.657(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.732
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  77.75
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.758(CFS)
```

```
Total initial stream area =        1.450(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.200 to Point/Station        9.100
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1502.000(Ft.)
Downstream point elevation =  1495.000(Ft.)
Channel length thru subarea  =   852.000(Ft.)
Channel base width  =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =      7.459(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =      7.459(CFS)
Depth of flow =   0.197(Ft.), Average velocity =   1.917(Ft/s)
Channel flow top width =   39.454(Ft.)
Flow Velocity =    1.92(Ft/s)
Travel time  =    7.41 min.
Time of concentration =   25.19 min.

Sub-Channel No. 1 Critical depth =      0.203(Ft.)
  '     '       '     Critical flow top width =     40.625(Ft.)
  '     '       '     Critical flow velocity=    1.808(Ft/s)
  '     '       '     Critical flow area =      4.126(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.378(In/Hr) for a    10.0 year storm
Subarea runoff =     11.345(CFS) for      9.450(Ac.)
Total runoff =     13.103(CFS)   Total area =      10.900(Ac.)
Depth of flow =   0.244(Ft.), Average velocity =   2.207(Ft/s)

Sub-Channel No. 1 Critical depth =      0.254(Ft.)
  '     '       '     Critical flow top width =     50.781(Ft.)
  '     '       '     Critical flow velocity=    2.033(Ft/s)
  '     '       '     Critical flow area =      6.447(Sq.Ft)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.100 to Point/Station        8.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of street segment elevation =  1495.000(Ft.)
End of street segment elevation =  1487.000(Ft.)
Length of street segment  =   208.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
```

```
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     13.524(CFS)
Depth of flow =   0.429(Ft.), Average velocity =   5.607(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  15.117(Ft.)
Flow velocity =   5.61(Ft/s)
Travel time =    0.62 min.     TC =   25.81  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.360(In/Hr) for a    10.0 year storm
Subarea runoff =      0.829(CFS) for      0.700(Ac.)
Total runoff =     13.933(CFS)   Total area =      11.600(Ac.)
Street flow at end of street =     13.933(CFS)
Half street flow at end of street =     13.933(CFS)
Depth of flow =   0.433(Ft.), Average velocity =   5.648(Ft/s)
Flow width (from curb towards crown)=  15.298(Ft.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        9.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     14.443(CFS)
Depth of flow =   0.994(Ft.), Average velocity =   2.923(Ft/s)
      ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     14.443(CFS)
  '     '     flow top width =      9.942(Ft.)
  '     '    velocity=    2.923(Ft/s)
  '     '     area =      4.942(Sq.Ft)
  '     '     Froude number =     0.731

Upstream point elevation =  1487.000(Ft.)
Downstream point elevation =  1481.000(Ft.)
Flow length =   952.000(Ft.)
Travel time  =    5.43 min.
Time of concentration =   31.24 min.
Depth of flow =   0.994(Ft.)
Average velocity =   2.923(Ft/s)
Total irregular channel flow =    14.443(CFS)
Irregular channel normal depth above invert elev. =   0.994(Ft.)
Average velocity of channel(s) =   2.923(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.230(In/Hr) for a    10.0 year storm
Subarea runoff =      0.962(CFS) for      0.900(Ac.)
Total runoff =     14.894(CFS)   Total area =      12.500(Ac.)
Depth of flow =   1.086(Ft.), Average velocity =   2.425(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station       15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     15.337(CFS)
Depth of flow =   0.951(Ft.), Average velocity =   3.390(Ft/s)
      ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     15.337(CFS)
  '     '      flow top width =      9.512(Ft.)
  '     '    velocity=    3.390(Ft/s)
  '     '      area =      4.524(Sq.Ft)
  '     '      Froude number =     0.866

Upstream point elevation =  1481.000(Ft.)
Downstream point elevation =  1476.000(Ft.)
Flow length =   556.000(Ft.)
Travel time  =    2.73 min.
Time of concentration =   33.97 min.
Depth of flow =   0.951(Ft.)
Average velocity =   3.390(Ft/s)
Total irregular channel flow =    15.337(CFS)
Irregular channel normal depth above invert elev. =   0.951(Ft.)
Average velocity of channel(s) =   3.390(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.176(In/Hr) for a    10.0 year storm
Subarea runoff =      0.817(CFS) for      0.800(Ac.)
Total runoff =     15.711(CFS)   Total area =      13.300(Ac.)
Depth of flow =   0.960(Ft.), Average velocity =   3.410(Ft/s)
End of computations, total study area =           13.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) = 0.198
Area averaged RI index number =  68.4
```

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/07/18  File:27259RATOFFoAE.out
------------------------------------------------------------------------
 PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oABCDE - Q100

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   887.000(Ft.)
Top (of initial area) elevation =  1750.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   246.000(Ft.)
Slope =    0.27734  s(percent)=      27.73
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.348 min.
Rainfall intensity =      3.300(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Initial subarea runoff =     19.528(CFS)
Total initial stream area =        6.800(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.800(Ac.)
Runoff from this stream =     19.528(CFS)
Time of concentration =   10.35 min.
Rainfall intensity =     3.300(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       19.528     10.35           3.300
Largest stream flow has longer time of concentration
Qp =     19.528 + sum of
Qp =     19.528

Total of 1 main streams to confluence:
Flow rates before confluence point:
      19.528
Area of streams before confluence:
        6.800


Results of confluence:
Total flow rate =     19.528(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =      6.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        1.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   797.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =  1516.000(Ft.)
Difference in elevation =   244.000(Ft.)
Slope =    0.30615  s(percent)=      30.61
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.720 min.
Rainfall intensity =      3.411(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      9.510(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.200 to Point/Station       1.300
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1516.000(Ft.)
End of natural channel elevation =   1504.000(Ft.)
Length of natural channel  =   224.000(Ft.)
Estimated mean flow rate at midpoint of channel =      9.510(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
 Velocity = 5.48(q^.33)(slope^.492)
Velocity using mean channel flow =   2.73(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0536
Corrected/adjusted channel slope =  0.0536
Travel time =    1.37 min.     TC =   11.09  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      3.181(In/Hr) for a   100.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      9.510(CFS)   Total area =       3.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.200 to Point/Station       1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      9.510(CFS)
Time of concentration =   11.09 min.
Rainfall intensity =     3.181(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       19.528     10.35            3.300
2        9.510     11.09            3.181
Largest stream flow has longer or shorter time of concentration
Qp =     19.528 + sum of
         Qa          Tb/Ta
          9.510 *    0.933 =      8.875
Qp =     28.403

Total of 2 main streams to confluence:
Flow rates before confluence point:
      19.528       9.510
```

```
Area of streams before confluence:
        6.800        3.200


Results of confluence:
Total flow rate =     28.403(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =     10.000(Ac.)


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Process from Point/Station        1.300 to Point/Station        3.100
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1504.000(Ft.)
End of natural channel elevation =   1488.000(Ft.)
Length of natural channel  =   629.000(Ft.)
Estimated mean flow rate at midpoint of channel =     42.604(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.90(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =    1.78 min.     TC =   12.13  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      3.034(In/Hr) for a   100.0 year storm
Subarea runoff =     26.326(CFS) for     10.000(Ac.)
Total runoff =     54.729(CFS)   Total area =      20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     20.000(Ac.)
Runoff from this stream =     54.729(CFS)
Time of concentration =   12.13 min.
Rainfall intensity =     3.034(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       54.729     12.13           3.034
Largest stream flow has longer time of concentration
```

```
Qp =     54.729 + sum of
Qp =     54.729

Total of 1 main streams to confluence:
Flow rates before confluence point:
      54.729
Area of streams before confluence:
       20.000


Results of confluence:
Total flow rate =     54.729(CFS)
Time of concentration =    12.126 min.
Effective stream area after confluence  =     20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   997.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   256.000(Ft.)
Slope =    0.25677  s(percent)=      25.68
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.011 min.
Rainfall intensity =      3.193(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     14.710(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.300(Ac.)
Runoff from this stream =     14.710(CFS)
Time of concentration =   11.01 min.
Rainfall intensity =     3.193(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.710     11.01                 3.193
Largest stream flow has longer time of concentration
Qp =     14.710 + sum of
Qp =     14.710

Total of 1 streams to confluence:
Flow rates before confluence point:
```

```
      14.710
Area of streams before confluence:
        5.300
Results of confluence:
Total flow rate =     14.710(CFS)
Time of concentration =    11.011 min.
Effective stream area after confluence =      5.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        2.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     24.105(CFS)
Depth of flow =   0.997(Ft.), Average velocity =   4.853(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     24.105(CFS)
  '     '     flow top width =      9.967(Ft.)
  '     '    velocity=    4.853(Ft/s)
  '     '     area =      4.967(Sq.Ft)
  '     '     Froude number =     1.211

Upstream point elevation =  1504.000(Ft.)
Downstream point elevation =  1496.000(Ft.)
Flow length =   456.000(Ft.)
Travel time  =    1.57 min.
Time of concentration =   12.58 min.
Depth of flow =   0.997(Ft.)
Average velocity =   4.853(Ft/s)
Total irregular channel flow =    24.105(CFS)
Irregular channel normal depth above invert elev. =   0.997(Ft.)
Average velocity of channel(s) =   4.853(Ft/s)
 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.827
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  80.00
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      2.976(In/Hr) for a   100.0 year storm
Subarea runoff =     18.713(CFS) for      7.600(Ac.)
Total runoff =     33.423(CFS)   Total area =      12.900(Ac.)
Depth of flow =   1.105(Ft.), Average velocity =   5.523(Ft/s)
!!Warning: Water is above left or right bank elevations
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   1.149(Ft.), Average velocity =   5.147(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
```

```
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
-----------------------------------------------------------------
Sub-Channel flow  =     33.424(CFS)
  '     '      flow top width =     10.000(Ft.)
  '     '    velocity=    5.147(Ft/s)
  '     '      area =      6.494(Sq.Ft)
  '     '      Froude number =     1.126

Upstream point elevation =  1496.000(Ft.)
Downstream point elevation =  1488.000(Ft.)
Flow length =   577.000(Ft.)
Travel time  =    1.87 min.
Time of concentration =   14.45 min.
Depth of flow =   1.149(Ft.)
Average velocity =   5.147(Ft/s)
Total irregular channel flow =    33.423(CFS)
Irregular channel normal depth above invert elev. =   1.149(Ft.)
Average velocity of channel(s) =   5.147(Ft/s)
!!Warning: Water is above left or right bank elevations
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     12.900(Ac.)
Runoff from this stream =     33.423(CFS)
Time of concentration =   14.45 min.
Rainfall intensity =     2.765(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)

1       54.729     12.13            3.034
2       33.423     14.45            2.765
Largest stream flow has longer or shorter time of concentration
Qp =     54.729 + sum of
         Qa          Tb/Ta
         33.423 *    0.839 =     28.055
Qp =     82.784

Total of 2 main streams to confluence:
Flow rates before confluence point:
      54.729      33.423
Area of streams before confluence:
       20.000       12.900

Results of confluence:
Total flow rate =     82.784(CFS)
Time of concentration =    12.126 min.
Effective stream area after confluence  =     32.900(Ac.)
End of computations, total study area =           32.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.954
Area averaged RI index number =  77.5
```

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/07/18  File:27259RAToFGHJ.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oFGHJ - Q100

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station        4.000 to Point/Station        5.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   781.000(Ft.)
Top (of initial area) elevation =  1502.500(Ft.)
Bottom (of initial area) elevation =  1498.000(Ft.)
Difference in elevation =     4.500(Ft.)
Slope =    0.00576  s(percent)=       0.58
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.080 min.
Rainfall intensity =      3.040(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
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Initial subarea runoff =      1.900(CFS)
Total initial stream area =        0.700(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station        5.000 to Point/Station        6.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      2.745(CFS)
Depth of flow =   0.436(Ft.), Average velocity =   2.888(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.40
       2             20.00              1.00
       3             25.00              0.00
       4             30.00              1.00
       5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =      2.745(CFS)
  '     '      flow top width =      4.360(Ft.)
  '     '    velocity=    2.888(Ft/s)
  '     '      area =      0.950(Sq.Ft)
  '     '      Froude number =     1.090

Upstream point elevation =  1498.000(Ft.)
Downstream point elevation =  1484.500(Ft.)
Flow length =   731.000(Ft.)
Travel time  =    4.22 min.
Time of concentration =   16.30 min.
Depth of flow =   0.436(Ft.)
Average velocity =   2.888(Ft/s)
Total irregular channel flow =     2.745(CFS)
Irregular channel normal depth above invert elev. =   0.436(Ft.)
Average velocity of channel(s) =   2.888(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.892
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.594(In/Hr) for a   100.0 year storm
Subarea runoff =      1.619(CFS) for      0.700(Ac.)
Total runoff =      3.519(CFS)   Total area =       1.400(Ac.)
Depth of flow =   0.479(Ft.), Average velocity =   3.073(Ft/s)


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Process from Point/Station        7.100 to Point/Station        7.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      4.160(CFS)
Depth of flow =   0.622(Ft.), Average velocity =   2.150(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
```

```
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =      4.160(CFS)
  '     '     flow top width =      6.221(Ft.)
  '     '    velocity=    2.150(Ft/s)
  '     '     area =      1.935(Sq.Ft)
  '     '     Froude number =     0.679

Upstream point elevation =  1484.000(Ft.)
Downstream point elevation =  1480.000(Ft.)
Flow length =   628.000(Ft.)
Travel time  =    4.87 min.
Time of concentration =   21.17 min.
Depth of flow =   0.622(Ft.)
Average velocity =   2.150(Ft/s)
Total irregular channel flow =     4.160(CFS)
Irregular channel normal depth above invert elev. =   0.622(Ft.)
Average velocity of channel(s) =   2.150(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.891
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.258(In/Hr) for a   100.0 year storm
Subarea runoff =      1.207(CFS) for      0.600(Ac.)
Total runoff =      4.725(CFS)   Total area =       2.000(Ac.)
Depth of flow =   0.653(Ft.), Average velocity =   2.219(Ft/s)


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Process from Point/Station        7.000 to Point/Station       22.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =      5.612(CFS)
Depth of flow =   0.559(Ft.), Average velocity =   3.594(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =      5.612(CFS)
  '     '     flow top width =      5.588(Ft.)
  '     '    velocity=    3.594(Ft/s)
  '     '     area =      1.561(Sq.Ft)
  '     '     Froude number =     1.198

Upstream point elevation =  1480.000(Ft.)
Downstream point elevation =  1471.000(Ft.)
```

```
Flow length =   438.000(Ft.)
Travel time  =    2.03 min.
Time of concentration =   23.20 min.
Depth of flow =   0.559(Ft.)
Average velocity =   3.594(Ft/s)
Total irregular channel flow =     5.612(CFS)
Irregular channel normal depth above invert elev. =   0.559(Ft.)
Average velocity of channel(s) =   3.594(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.151(In/Hr) for a   100.0 year storm
Subarea runoff =      1.723(CFS) for      0.900(Ac.)
Total runoff =      6.448(CFS)   Total area =       2.900(Ac.)
Depth of flow =   0.589(Ft.), Average velocity =   3.721(Ft/s)
End of computations, total study area =            2.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/06/18  File:27259eRAToNPRKL.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oNPRKL - Q100

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station        9.300 to Point/Station        9.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   484.000(Ft.)
Top (of initial area) elevation =  1513.500(Ft.)
Bottom (of initial area) elevation =  1502.000(Ft.)
Difference in elevation =    11.500(Ft.)
Slope =    0.02376  s(percent)=       2.38
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.784 min.
Rainfall intensity =      2.477(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.847
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  89.65
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Initial subarea runoff =      3.043(CFS)
Total initial stream area =        1.450(Ac.)
Pervious area fraction = 1.000
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.200 to Point/Station        9.100
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1502.000(Ft.)
Downstream point elevation =  1495.000(Ft.)
Channel length thru subarea  =   852.000(Ft.)
Channel base width  =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =     11.891(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =     11.891(CFS)
Depth of flow =   0.235(Ft.), Average velocity =   2.154(Ft/s)
Channel flow top width =   46.993(Ft.)
Flow Velocity =    2.15(Ft/s)
Travel time  =    6.59 min.
Time of concentration =   24.38 min.

Sub-Channel No. 1 Critical depth =      0.244(Ft.)
  '     '       '     Critical flow top width =     48.828(Ft.)
  '     '       '     Critical flow velocity=    1.995(Ft/s)
  '     '       '     Critical flow area =      5.960(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.095(In/Hr) for a   100.0 year storm
Subarea runoff =     17.620(CFS) for      9.450(Ac.)
Total runoff =     20.663(CFS)   Total area =      10.900(Ac.)
Depth of flow =   0.289(Ft.), Average velocity =   2.473(Ft/s)

Sub-Channel No. 1 Critical depth =      0.305(Ft.)
  '     '       '     Critical flow top width =     60.938(Ft.)
  '     '       '     Critical flow velocity=    2.226(Ft/s)
  '     '       '     Critical flow area =      9.283(Sq.Ft)

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.100 to Point/Station        8.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of street segment elevation =  1495.000(Ft.)
End of street segment elevation =  1487.000(Ft.)
Length of street segment  =   208.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
```

```
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     21.327(CFS)
Depth of flow =   0.489(Ft.), Average velocity =   6.263(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.107(Ft.)
Flow velocity =   6.26(Ft/s)
Travel time =    0.55 min.     TC =   24.93  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.071(In/Hr) for a   100.0 year storm
Subarea runoff =      1.290(CFS) for      0.700(Ac.)
Total runoff =     21.953(CFS)   Total area =      11.600(Ac.)
Street flow at end of street =     21.953(CFS)
Half street flow at end of street =     21.953(CFS)
Depth of flow =   0.493(Ft.), Average velocity =   6.307(Ft/s)
Flow width (from curb towards crown)=  18.314(Ft.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        9.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     22.711(CFS)
Depth of flow =   1.251(Ft.), Average velocity =   2.299(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.40
       2             20.00              1.00
       3             25.00              0.00
       4             30.00              1.00
       5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     22.711(CFS)
  '     '     flow top width =     28.839(Ft.)
  '     '    velocity=    2.299(Ft/s)
  '     '     area =      9.878(Sq.Ft)
  '     '     Froude number =     0.692

Upstream point elevation =  1487.000(Ft.)
Downstream point elevation =  1481.000(Ft.)
Flow length =   952.000(Ft.)
Travel time  =    6.90 min.
Time of concentration =   31.83 min.
Depth of flow =   1.251(Ft.)
Average velocity =   2.299(Ft/s)
Total irregular channel flow =    22.711(CFS)
Irregular channel normal depth above invert elev. =   1.251(Ft.)
Average velocity of channel(s) =   2.299(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.819(In/Hr) for a   100.0 year storm
Subarea runoff =      1.455(CFS) for      0.900(Ac.)
Total runoff =     23.407(CFS)    Total area =      12.500(Ac.)
Depth of flow =   1.261(Ft.), Average velocity =   2.304(Ft/s)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station       15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     24.054(CFS)
Depth of flow =   1.212(Ft.), Average velocity =   2.731(Ft/s)
      ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.40
      2             20.00              1.00
      3             25.00              0.00
      4             30.00              1.00
      5             40.00              1.40
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     24.054(CFS)
  '     '     flow top width =     25.903(Ft.)
  '     '    velocity=    2.731(Ft/s)
  '     '     area =      8.806(Sq.Ft)
  '     '     Froude number =     0.826

Upstream point elevation =  1481.000(Ft.)
Downstream point elevation =  1476.000(Ft.)
Flow length =   556.000(Ft.)
Travel time  =    3.39 min.
Time of concentration =   35.22 min.
Depth of flow =   1.212(Ft.)
Average velocity =   2.731(Ft/s)
Total irregular channel flow =    24.054(CFS)
Irregular channel normal depth above invert elev. =   1.212(Ft.)
Average velocity of channel(s) =   2.731(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.888
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.724(In/Hr) for a   100.0 year storm
Subarea runoff =      1.225(CFS) for      0.800(Ac.)
Total runoff =     24.632(CFS)    Total area =      13.300(Ac.)
Depth of flow =   1.220(Ft.), Average velocity =   2.733(Ft/s)
End of computations, total study area =           13.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

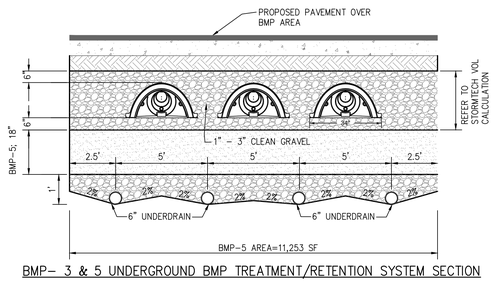
Area averaged pervious area fraction(Ap) = 0.198
Area averaged RI index number =  68.4
```

APPENDIX B.3 – Rational Method
3. On-site Proposed 10yr & 100yr

PROPOSED DRAINAGE MAP - RATIONAL METHOD

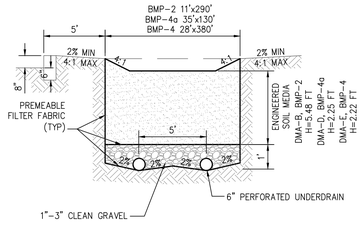
DRAINAGE LEGEND

SYMBOL	DEFINITION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	PROPOSED DEVELOPMENT DRAINAGE BOUNDARY
	DIRECTION OF FLOW
Q100 = 10.2cfs	100 YEAR FLOW FOR AREA
Q10 = 6.2cfs	10 YEAR FLOW FOR AREA
L=762'	LENGTH OF TRAVEL
(3) EL=1431	NODE WITH ELEVATION
A	AREA NAME (ON-SITE)
1.70	AREA ACRES



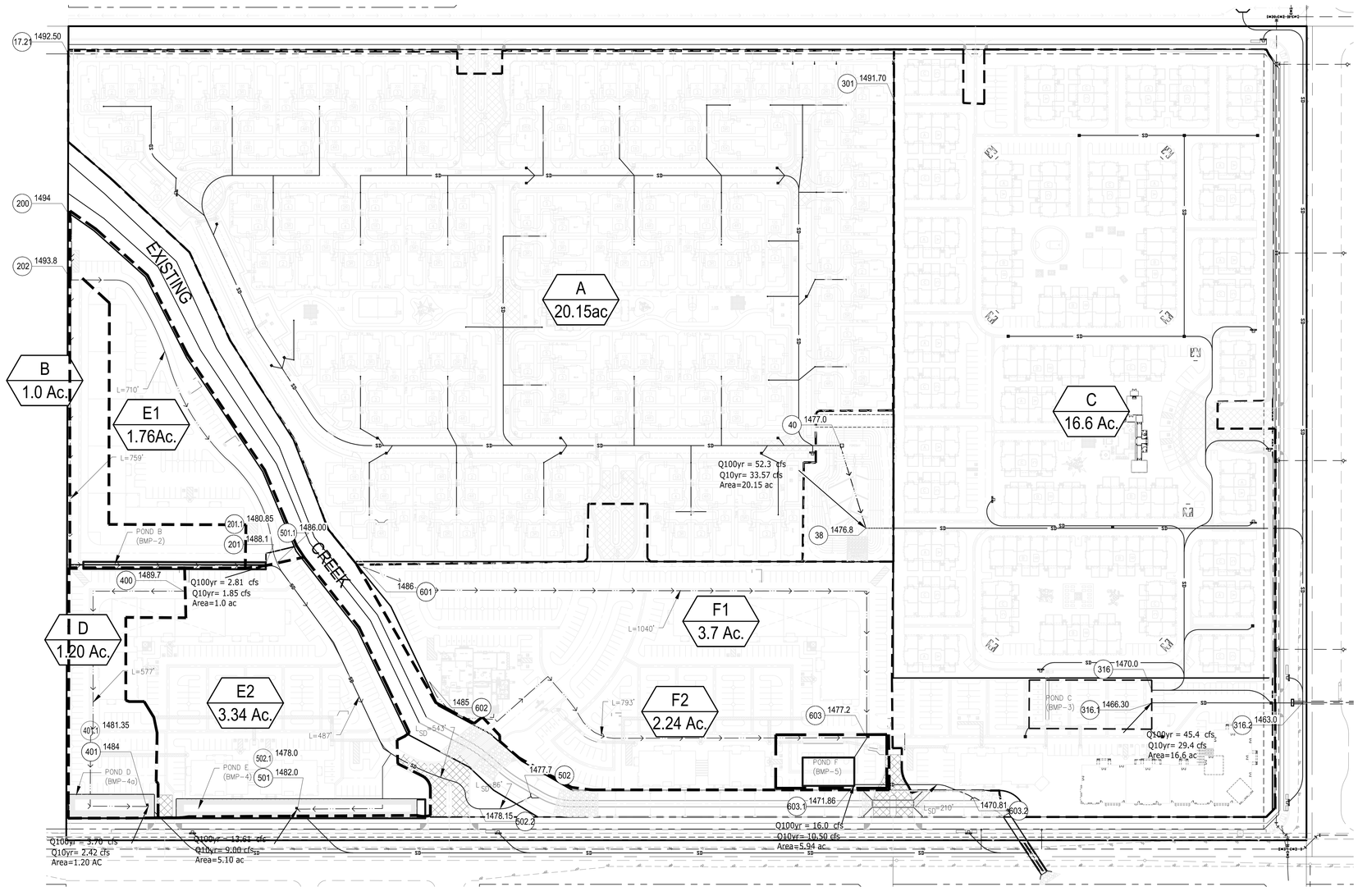
BMP- 3 & 5 UNDERGROUND BMP TREATMENT/RETENTION SYSTEM SECTION

N.T.S.



BMP-2(POND B), BMP-4a(POND D) & BMP-4 (POND E)
BIORETENTION FACILITY WITH UNDERDRAIN

N.T.S.



100 YR			
AREA DESIGNATION	AREA AC.	NODE	Q100 (CFS)
A	20.15	38	52.30
B	1.00	201	2.81
C	16.60	316.1	45.40
D	1.20	401	3.70
E	5.10	501	13.61
F	5.94	603.1	16.00
TOTAL	49.99		133.82

10 YR			
AREA DESIGNATION	AREA AC.	NODE	Q10 (CFS)
A	20.15	38	33.57
B	1.00	201	1.85
C	16.60	316.1	29.40
D	1.20	401	2.42
E	5.10	501	9.00
F	5.94	603.1	10.50
TOTAL	49.99		86.74

GRAPHIC SCALE
80 0 40 80 160 240
1 inch = 80 ft.

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1-800-227-2600

REVISIONS

SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:
CHRIS D. HOPPER
RCE NO. 34821
DATE
Benjie

SEAL
REGISTERED PROFESSIONAL ENGINEER CHRIS D. HOPPER No. 34821 Exp. 9/30/17 CIVIL STATE OF CALIFORNIA

SCALE: 1" =40'
DESIGN: BAM/REK
DRAWN: BENJIE
CHECKED: HJK/BAM
APPROVED: HJK/CDH
DATE: NOVEMBER, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH
DIRECTOR OF PUBLIC WORKS/
CITY ENGINEER
RCE 61253
EXP. 6/30/16
DATE

RECOMMENDED BY:
DATE

CITY OF MENIFEE

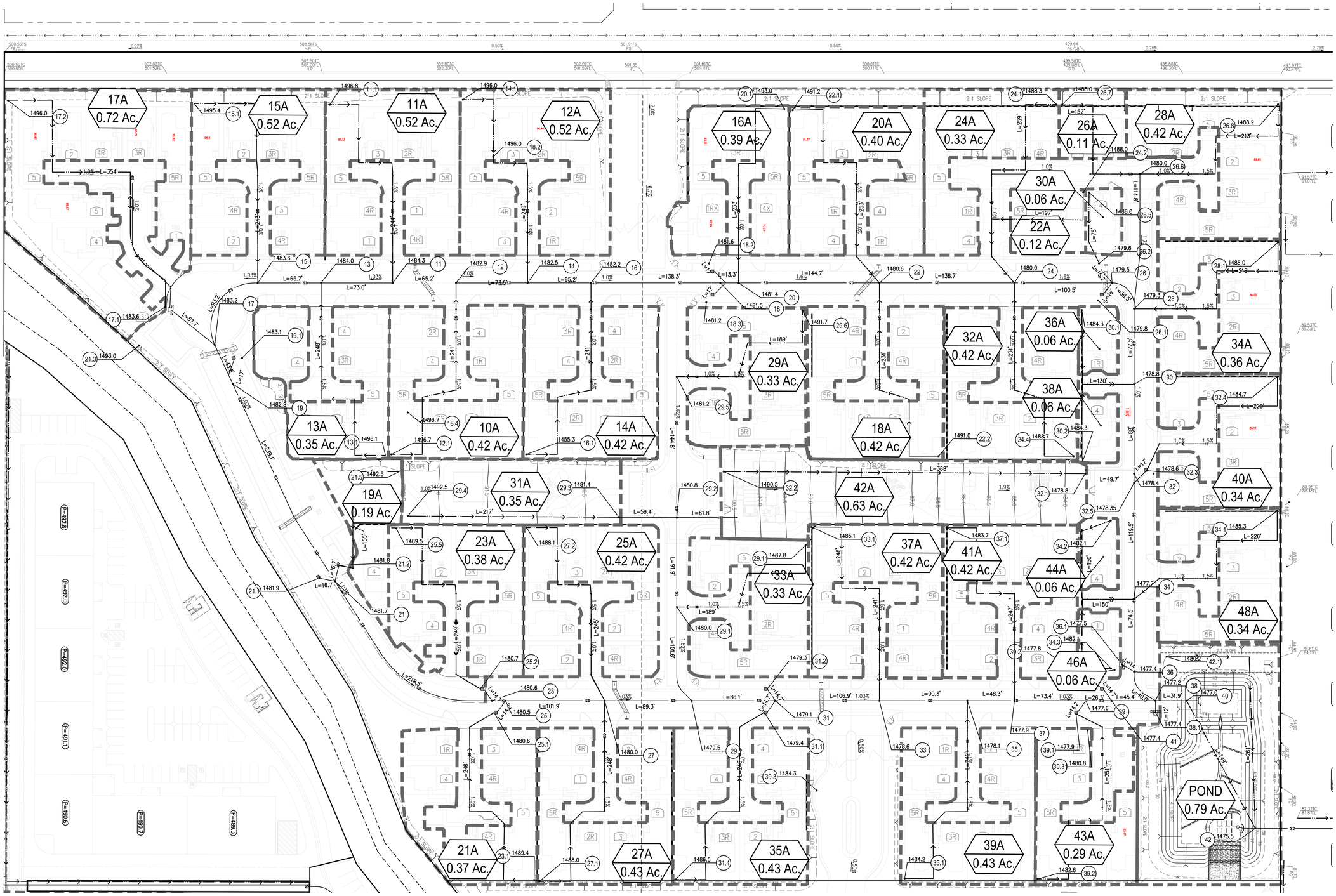
PROP. DRAINAGE MAP FOR AREA A, B, C, D, E & F
MILL CREEK PROMENADE

RATIONAL METHOD - 10YR & 100YR

SHEET NO.
1 OF 1

PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\PROPOSED\RATIONAL\AREA-ABCDEF\proAABCDEF-HYDRO-RAT-PLAN.dwg 2-26-18 03:39:17 PM



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APPROVED:	HJK/CDH
DATE:	NOVEMBER, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH — RCE 61253 — DATE
DIRECTOR OF PUBLIC WORKS/ CITY ENGINEER — EXP. 6/30/16

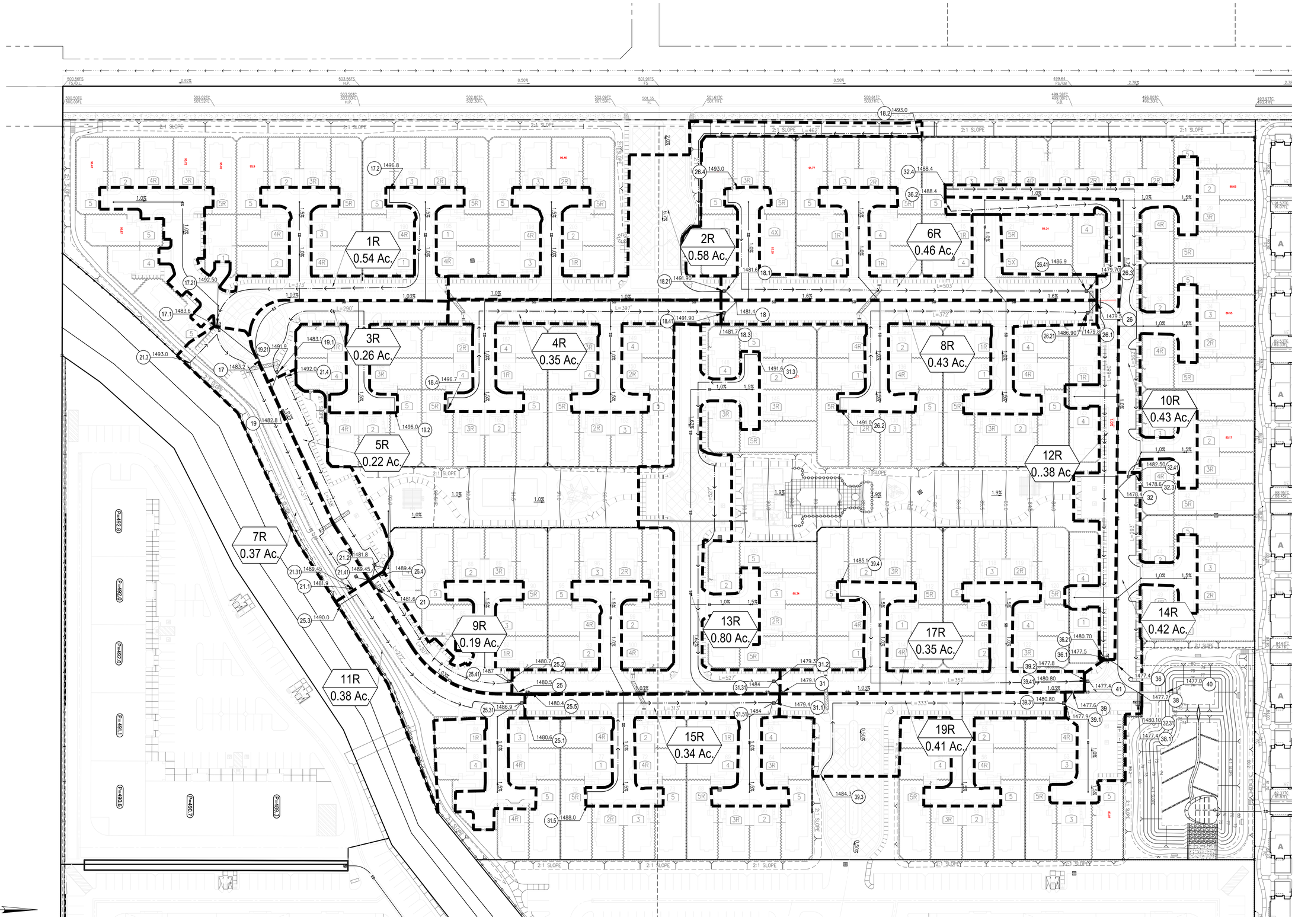
RECOMMENDED BY: — DATE

CITY OF MENIFEE

RATIONAL METHOD 10YR & 100YR
MILL CREEK PROMENADE
AREA A PROPOSED DEVELOPMENT

SHEET NO.
____ OF ____
PROJECT NO:

S:\Land Projects 2004\2259 MILL CREEK PROMENADE\UNIX\10-HYDROLOGY\PROPOSED\RATIO\AREA-A\proposed AREA A-HYDRO PLAN.dwg 1-30-18 04:44:16 PM



GRAPHIC SCALE

40 0 20 40 80 120

1 inch = 40 ft.

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REVISIONS				
SHT.	DESCRIPTION	DATE	BY	APRD

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Tel: (951) 698-1330 Fax: (951) 698-8657

PREPARED BY:

CHRIS D. HOPPER

RCE NO. 34821
DATE

Benjie

SEAL
REGISTERED PROFESSIONAL ENGINEER CHRIS D. HOPPER No. 34821 Exp. 9/30/17 CIVIL STATE OF CALIFORNIA

SCALE:	1" =40'
DESIGN:	BAM/REK
DRAWN:	BENJIE
CHECKED:	HJK/BAM
APPROVED:	HJK/CDH
DATE:	NOVEMBER, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH — RCE 61253 — DATE
DIRECTOR OF PUBLIC WORKS/ — EXP. 6/30/16
CITY ENGINEER

RECOMMENDED BY: — DATE

CITY OF MENIFEE

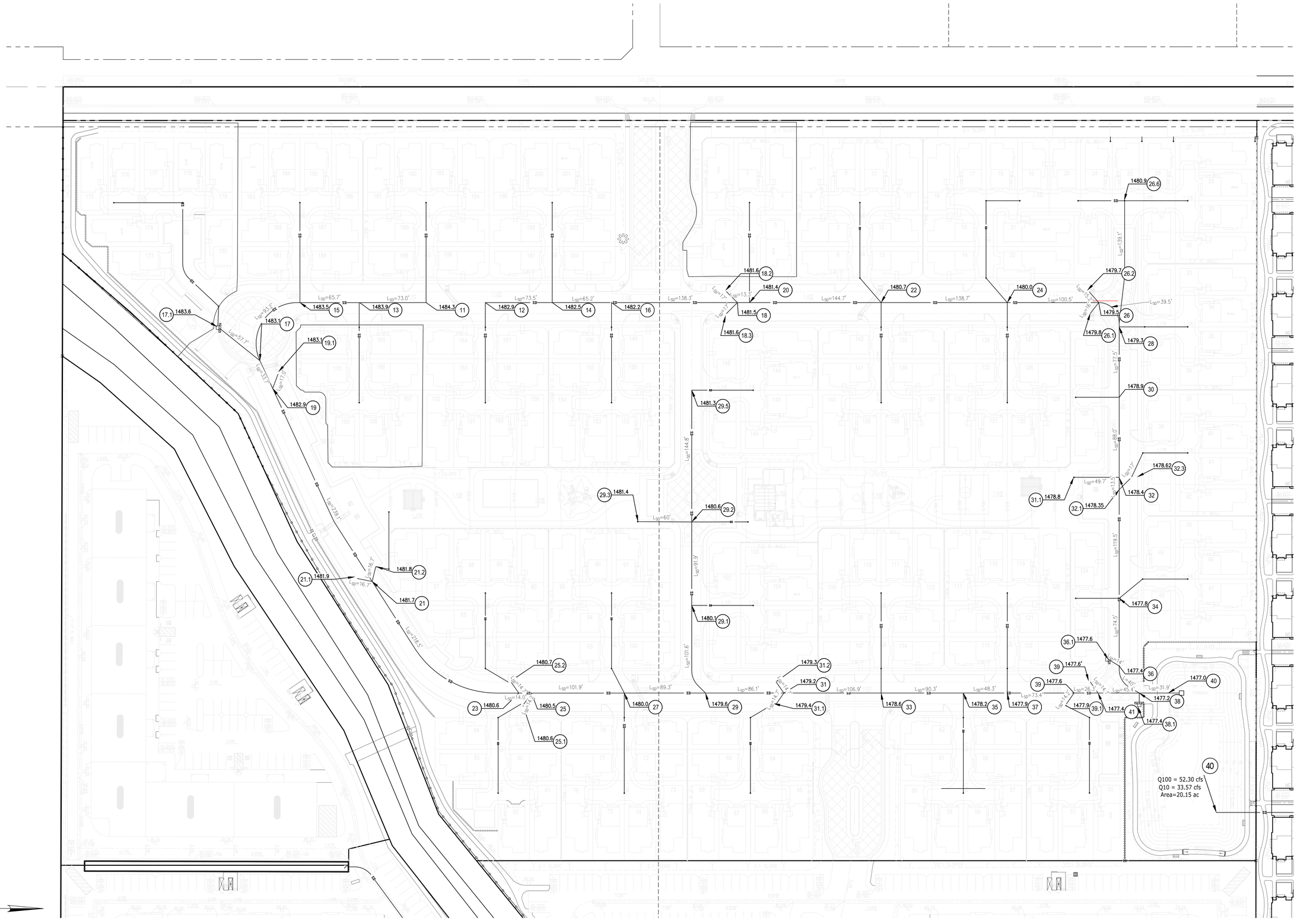
RATIONAL METHOD 10YR & 100YR
MILL CREEK PROMENADE
AREA A PROP. ROAD DEVELOPMENT

SHEET NO.

____ OF ____

PROJECT NO:

S:\Land Projects\2004\27259 MILL CREEK PROMENADE\UNIX\10-HYDROLOGY\PROPOSED\RAT\AREA-A\proposed AREA A-HYDRO PLAN-roads.dwg 1-30-18 04:41:02 PM



GRAPHIC SCALE

40 0 20 40 80 120

1 inch = 40 ft.

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PREPARED BY:

CHRIS D. HOPPER

RCE NO. 34821

DATE

Benjie

SEAL

REGISTERED PROFESSIONAL ENGINEER
CHRIS D. HOPPER
No. 34821
Exp. 9/30/17
CIVIL
STATE OF CALIFORNIA

SCALE: 1" =40'
DESIGN: BAM/REK
DRAWN: BENJIE
CHECKED: HJK/BAM
APPROVED: HJK/CDH
DATE: NOVEMBER, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH RCE 61253
DIRECTOR OF PUBLIC WORKS/ EXP. 6/30/16
CITY ENGINEER

DATE

RECOMMENDED BY:

DATE

CITY OF MENIFEE

RATIONAL METHOD 10YR & 100YR
MILL CREEK PROMENADE
AREA A PROP. SD DEVELOPMENT

SHEET NO.

____ OF ____

PROJECT NO:

S:\Land Projects 2004\2729 MILL CREEK PROMENADE\DWG\01-HYDROLOGY\PROPOSED\RAT\AREA-A\proposed AREA A-HYDRO PLAN-STORM DRAINS.dwg 2-16-18 10:24:12 PM

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area A - Areas, Length of Concentration, Nodes

RATIONAL METHOD

LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Node Up	Elev	Node Dn	Elev
10A	18122	0.42	241	12.1	1496.70	12.0	1482.80
12A	22552	0.52	249	14.1	1496.00	14.0	1482.40
14A	18122	0.42	233	16.1	1495.30	16.0	1482.10
16A	16928	0.39	253	20.1	1493.00	20.0	1481.30
18A	18122	0.42	231	22.2	1491.00	22.0	1480.60
20A	19862	0.46	253	22.1	1491.20	22.0	1480.60
22A	5027	0.12	197	24.2	1488.00	24.0	1480.00
24A	14333	0.33	259	24.1	1488.30	24.0	1480.00
26A	4873	0.11	152	26.7	1488.00	26.6	1480.00
28A	18303	0.42	213	26.8	1488.20	26.6	1480.00
30A	2526	0.06	75	26.5	1488.00	26.2	1479.60
32A	18122	0.42	231	24.4	1488.70	24.0	1480.00
34A	14617	0.36	218	28.1	1486.00	28.0	1479.30
36A	2495	0.06	130	30.1	1484.30	30.0	1478.80
38A	2500	0.06	130	30.2	1484.30	30.0	1478.80
40A	14617	0.34	220	32.4	1484.70	32.3	1478.60
42A	27516	0.63	368	32.2	1490.50	32.1	1478.80
44A	2639	0.06	150	34.2	1482.10	34.0	1477.70
46A	2640	0.06	150	34.3	1482.10	34.0	1477.70
48A	14617	0.34	226	34.1	1483.30	34.0	1477.70
POND	34423	0.79	219	40.1	1477.20	41.0	1470.00
	total	6.79					

Run-off Index			Condominiums	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	68

Imperviousness- CONDOMINIUMS= 68

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Areas - Areas, Length of Concentration, Nodes

11A	22552	0.52	244.00	11.10	1496.80	11.0	1484.30
13A	15366	0.35	248.00	13.10	1496.10	13.0	1484.00
15A	22552	0.52	243.00	15.10	1495.40	15.0	1483.60
17A	31423	0.72	354.00	17.20	1496.00	17.1	1483.60
19A	8200	0.19	155.00	21.50	1492.50	21.2	1481.80
21A	16117	0.37	246.00	23.10	1489.40	25.1	1480.60
23A	16627	0.38	249.00	25.50	1489.50	25.2	1480.70
25A	18120	0.42	245.00	27.20	1488.10	27.0	1480.00
27A	18587	0.43	248.00	27.10	1488.00	27.0	1480.00
29A	14385	0.33	189.00	29.60	1491.70	29.5	1481.20
31A	15209	0.35	217.00	29.40	1492.50	29.3	1481.40
33A	14382	0.33	189.00	29.11	1487.80	29.1	1480.00
35A	18578.00	0.43	246.00	31.40	1486.50	31.1	1479.40
37A	18120.00	0.42	241.00	33.10	1485.10	33.0	1478.60
39A	18587.00	0.43	242.00	35.10	1484.20	35.0	1478.10
41A	18122.00	0.42	247.00	37.10	1483.70	37.0	1477.90
43A	12662.00	0.29	251.00	39.20	1482.60	39.1	1477.90
	total	6.90					

Run-off Index			Condominiums	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	68

Imperviousness- CONDOMINIUMS= 68

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Areas - Areas, Length of Concentration, Nodes

ROADS

Mark	Area (sf)	Area (ac)	L (ft)	Node Up	Elev	Node Dn	Elev
2R	25264.80	0.58	462.00	18.2	1493.00	18.21	1491.90
4R	15126.00	0.35	397.00	18.4	1496.70	18.41	1491.90
6R	20091.00	0.46	503.00	26.4	1493.00	26.41	1486.90
8R	18730.80	0.43	372.00	26.2	1491.00	26.21	1486.90
10R	18679.00	0.43	562.00	32.4	1488.40	32.41	1478.50
12R	16352.00	0.38	680.00	36.2	1488.40	36.21	1480.70
14R	17859.60	0.41	293.00	32.3	1482.50	32.31	1480.10
1R	23692.00	0.54	373.00	17.2	1496.80	17.21	1492.50
3R	11489.00	0.26	290.00	19.2	1496.00	19.21	1491.10
5R	9530.00	0.22	258.00	21.4	1492.00	21.41	1489.45
7R	15907.00	0.37	371.00	21.3	1493.00	21.31	1489.45
9R	8406.00	0.19	207.00	25.4	1489.40	25.41	1487.00
11R	16659.00	0.38	272.00	25.3	1490.00	25.31	1486.90
13R	34793.00	0.80	527.00	31.3	1491.60	31.31	1484.00
15R	14619.00	0.34	313.00	31.5	1488.00	31.51	1484.00
17R	15387.00	0.35	352.00	39.4	1485.10	39.40	1480.70
19R	17993.00	0.41	333.00	39.3	1484.30	39.31	1480.80
	total	6.90					

Run-off Index			Condominiums	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	68

Imperviousness- CONDOMINIUMS= 68

```
              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/18/18  File:27259rat104810.out
------------------------------------------------------------------------
    PM #13523
MILL CREEK PROMENADE
AREA A Q10 (ONSITE-West side)

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       12.100 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   241.000(Ft.)
Top (of initial area) elevation =  1496.700(Ft.)
Bottom (of initial area) elevation =  1482.800(Ft.)
Difference in elevation =    13.900(Ft.)
Slope =    0.05768  s(percent)=       5.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.872 min.
Rainfall intensity =      2.982(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
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```
Initial subarea runoff =      1.057(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1482.800(Ft.)
Downstream point/station elevation =  1482.400(Ft.)
Pipe length  =    73.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.057(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.057(CFS)
Normal flow depth in pipe =    6.47(In.)
Flow top width inside pipe =    8.09(In.)
Critical Depth =    5.66(In.)
Pipe flow velocity =      3.11(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =     6.27 min.


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Process from Point/Station       12.000 to Point/Station       14.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.057(CFS)
Time of concentration =    6.27 min.
Rainfall intensity =     2.881(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.057      6.27                 2.881
Largest stream flow has longer time of concentration
Qp =      1.057 + sum of
Qp =      1.057

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.057
Area of streams before confluence:
        0.420
Results of confluence:
Total flow rate =      1.057(CFS)
Time of concentration =     6.266 min.
Effective stream area after confluence =      0.420(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.100 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   249.000(Ft.)
Top (of initial area) elevation =  1496.000(Ft.)
Bottom (of initial area) elevation =  1482.400(Ft.)
Difference in elevation =    13.600(Ft.)
Slope =    0.05462  s(percent)=       5.46
```

```
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.251 min.
Rainfall intensity =      3.164(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      1.430(CFS)
Total initial stream area =        0.520(Ac.)
Pervious area fraction = 0.200


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Process from Point/Station       14.100 to Point/Station       14.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.520(Ac.)
Runoff from this stream =      1.430(CFS)
Time of concentration =    5.25 min.
Rainfall intensity =     3.164(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.057      6.27                 2.881
2        1.430      5.25                 3.164
Largest stream flow has longer or shorter time of concentration
Qp =      1.430 + sum of
         Qa          Tb/Ta
          1.057 *    0.838 =      0.885
Qp =      2.316

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.057       1.430
Area of streams before confluence:
        0.420        0.520
Results of confluence:
Total flow rate =      2.316(CFS)
Time of concentration =     5.251 min.
Effective stream area after confluence =      0.940(Ac.)


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Process from Point/Station       14.000 to Point/Station       16.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1482.400(Ft.)
Downstream point/station elevation =  1482.100(Ft.)
Pipe length  =    65.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.316(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.316(CFS)
Normal flow depth in pipe =    9.41(In.)
Flow top width inside pipe =    9.87(In.)
Critical Depth =    7.81(In.)
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Pipe flow velocity =      3.50(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =     5.56 min.


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Process from Point/Station       14.000 to Point/Station       16.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.940(Ac.)
Runoff from this stream =      2.316(CFS)
Time of concentration =    5.56 min.
Rainfall intensity =     3.069(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.316      5.56                 3.069
Largest stream flow has longer time of concentration
Qp =      2.316 + sum of
Qp =      2.316

Total of 1 streams to confluence:
Flow rates before confluence point:
       2.316
Area of streams before confluence:
        0.940
Results of confluence:
Total flow rate =      2.316(CFS)
Time of concentration =     5.561 min.
Effective stream area after confluence =      0.940(Ac.)


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Process from Point/Station       16.100 to Point/Station       16.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =  1495.300(Ft.)
Bottom (of initial area) elevation =  1482.100(Ft.)
Difference in elevation =    13.200(Ft.)
Slope =    0.05665  s(percent)=       5.67
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.814 min.
Rainfall intensity =      2.997(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.062(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       16.100 to Point/Station       16.000
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**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.062(CFS)
Time of concentration =    5.81 min.
Rainfall intensity =     2.997(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.316      5.56                 3.069
2        1.062      5.81                 2.997
Largest stream flow has longer or shorter time of concentration
Qp =      2.316 + sum of
         Qa          Tb/Ta
          1.062 *    0.956 =      1.016
Qp =      3.332

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.316       1.062
Area of streams before confluence:
        0.940        0.420
Results of confluence:
Total flow rate =      3.332(CFS)
Time of concentration =     5.561 min.
Effective stream area after confluence =      1.360(Ac.)


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Process from Point/Station       16.000 to Point/Station       18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1482.100(Ft.)
Downstream point/station elevation =  1481.400(Ft.)
Pipe length  =   132.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.332(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.332(CFS)
Normal flow depth in pipe =    9.34(In.)
Flow top width inside pipe =   14.54(In.)
Critical Depth =    8.82(In.)
Pipe flow velocity =      4.15(Ft/s)
Travel time through pipe =    0.53 min.
Time of concentration (TC) =     6.10 min.


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Process from Point/Station       16.000 to Point/Station       18.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.360(Ac.)
Runoff from this stream =      3.332(CFS)
Time of concentration =    6.10 min.
Rainfall intensity =     2.923(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
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```
1        3.332      6.10                 2.923
Largest stream flow has longer time of concentration
Qp =      3.332 + sum of
Qp =      3.332

Total of 1 streams to confluence:
Flow rates before confluence point:
       3.332
Area of streams before confluence:
        1.360
Results of confluence:
Total flow rate =      3.332(CFS)
Time of concentration =     6.095 min.
Effective stream area after confluence =      1.360(Ac.)


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Process from Point/Station       18.200 to Point/Station       18.210
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   462.000(Ft.)
Top (of initial area) elevation =  1493.000(Ft.)
Bottom (of initial area) elevation =  1491.900(Ft.)
Difference in elevation =     1.100(Ft.)
Slope =    0.00238  s(percent)=       0.24
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.411 min.
Rainfall intensity =      1.853(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.818
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.879(CFS)
Total initial stream area =        0.580(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       18.200 to Point/Station       18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.600(Ft.)
Downstream point/station elevation =  1481.500(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.879(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.879(CFS)
Normal flow depth in pipe =    5.51(In.)
Flow top width inside pipe =    8.77(In.)
Critical Depth =    5.15(In.)
Pipe flow velocity =      3.10(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =    14.50 min.


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Process from Point/Station       16.000 to Point/Station       18.000
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**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.580(Ac.)
Runoff from this stream =      0.879(CFS)
Time of concentration =   14.50 min.
Rainfall intensity =     1.847(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.332      6.10                 2.923
2        0.879     14.50                 1.847
Largest stream flow has longer or shorter time of concentration
Qp =      3.332 + sum of
         Qa          Tb/Ta
          0.879 *    0.420 =      0.370
Qp =      3.701

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.332       0.879
Area of streams before confluence:
        1.360        0.580
Results of confluence:
Total flow rate =      3.701(CFS)
Time of concentration =     6.095 min.
Effective stream area after confluence =      1.940(Ac.)


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Process from Point/Station       18.400 to Point/Station       18.410
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   397.000(Ft.)
Top (of initial area) elevation =  1496.700(Ft.)
Bottom (of initial area) elevation =  1491.900(Ft.)
Difference in elevation =     4.800(Ft.)
Slope =    0.01209  s(percent)=       1.21
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.800 min.
Rainfall intensity =      2.273(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.830
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.660(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       18.300 to Point/Station       18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1481.600(Ft.)
Downstream point/station elevation =  1481.500(Ft.)
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Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.660(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.660(CFS)
Normal flow depth in pipe =    4.61(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    4.43(In.)
Pipe flow velocity =      2.90(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.90 min.


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Process from Point/Station       16.000 to Point/Station       18.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.350(Ac.)
Runoff from this stream =      0.660(CFS)
Time of concentration =    9.90 min.
Rainfall intensity =     2.261(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.332      6.10                 2.923
2        0.879     14.50                 1.847
3        0.660      9.90                 2.261
Largest stream flow has longer or shorter time of concentration
Qp =      3.332 + sum of
         Qa          Tb/Ta
          0.879 *    0.420 =      0.370
         Qa          Tb/Ta
          0.660 *    0.616 =      0.407
Qp =      4.108

Total of 3 streams to confluence:
Flow rates before confluence point:
       3.332       0.879       0.660
Area of streams before confluence:
        1.360        0.580        0.350
Results of confluence:
Total flow rate =      4.108(CFS)
Time of concentration =     6.095 min.
Effective stream area after confluence =      2.290(Ac.)


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Process from Point/Station       18.000 to Point/Station       20.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.500(Ft.)
Downstream point/station elevation =   148.000(Ft.)
Pipe length  =    18.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.108(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     4.108(CFS)
Normal flow depth in pipe =    1.59(In.)
Flow top width inside pipe =    2.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =    155.35(Ft/s)
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Travel time through pipe =    0.00 min.
Time of concentration (TC) =     6.10 min.


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Process from Point/Station       18.000 to Point/Station       20.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.290(Ac.)
Runoff from this stream =      4.108(CFS)
Time of concentration =    6.10 min.
Rainfall intensity =     2.923(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.108      6.10                 2.923
Largest stream flow has longer time of concentration
Qp =      4.108 + sum of
Qp =      4.108

Total of 1 streams to confluence:
Flow rates before confluence point:
       4.108
Area of streams before confluence:
        2.290
Results of confluence:
Total flow rate =      4.108(CFS)
Time of concentration =     6.097 min.
Effective stream area after confluence =      2.290(Ac.)


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Process from Point/Station       20.100 to Point/Station       20.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   253.000(Ft.)
Top (of initial area) elevation =  1493.000(Ft.)
Bottom (of initial area) elevation =  1481.300(Ft.)
Difference in elevation =    11.700(Ft.)
Slope =    0.04625  s(percent)=       4.62
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.258 min.
Rainfall intensity =      2.883(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.947(CFS)
Total initial stream area =        0.390(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       18.000 to Point/Station       20.000
**** CONFLUENCE OF MINOR STREAMS ****
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____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.390(Ac.)
Runoff from this stream =      0.947(CFS)
Time of concentration =    6.26 min.
Rainfall intensity =     2.883(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.108      6.10                 2.923
2        0.947      6.26                 2.883
Largest stream flow has longer or shorter time of concentration
Qp =      4.108 + sum of
         Qa          Tb/Ta
          0.947 *    0.974 =      0.922
Qp =      5.030

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.108       0.947
Area of streams before confluence:
        2.290        0.390
Results of confluence:
Total flow rate =      5.030(CFS)
Time of concentration =     6.097 min.
Effective stream area after confluence =      2.680(Ac.)


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Process from Point/Station       20.000 to Point/Station       22.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1481.300(Ft.)
Downstream point/station elevation =  1480.600(Ft.)
Pipe length  =   144.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.030(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.030(CFS)
Normal flow depth in pipe =   10.97(In.)
Flow top width inside pipe =   17.56(In.)
Critical Depth =   10.36(In.)
Pipe flow velocity =      4.46(Ft/s)
Travel time through pipe =    0.54 min.
Time of concentration (TC) =     6.64 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       22.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.680(Ac.)
Runoff from this stream =      5.030(CFS)
Time of concentration =    6.64 min.
Rainfall intensity =     2.794(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1        5.030      6.64                 2.794
Largest stream flow has longer time of concentration
Qp =      5.030 + sum of
Qp =      5.030

Total of 1 streams to confluence:
Flow rates before confluence point:
       5.030
Area of streams before confluence:
        2.680
Results of confluence:
Total flow rate =      5.030(CFS)
Time of concentration =     6.638 min.
Effective stream area after confluence =      2.680(Ac.)


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Process from Point/Station       24.100 to Point/Station       24.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   231.000(Ft.)
Top (of initial area) elevation =  1488.700(Ft.)
Bottom (of initial area) elevation =  1480.600(Ft.)
Difference in elevation =     8.100(Ft.)
Slope =    0.03506  s(percent)=       3.51
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.378 min.
Rainfall intensity =      2.854(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.009(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       20.000 to Point/Station       22.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.009(CFS)
Time of concentration =    6.38 min.
Rainfall intensity =     2.854(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.030      6.64                 2.794
2        1.009      6.38                 2.854
Largest stream flow has longer time of concentration
Qp =      5.030 + sum of
        Qb         Ia/Ib
         1.009 *    0.979 =      0.988
```

```
Qp =      6.018

Total of 2 streams to confluence:
Flow rates before confluence point:
       5.030       1.009
Area of streams before confluence:
        2.680        0.420
Results of confluence:
Total flow rate =      6.018(CFS)
Time of concentration =     6.638 min.
Effective stream area after confluence =      3.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.100 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   253.000(Ft.)
Top (of initial area) elevation =  1491.200(Ft.)
Bottom (of initial area) elevation =  1480.600(Ft.)
Difference in elevation =    10.600(Ft.)
Slope =    0.04190  s(percent)=       4.19
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.383 min.
Rainfall intensity =      2.853(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.104(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       20.000 to Point/Station       22.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.460(Ac.)
Runoff from this stream =      1.104(CFS)
Time of concentration =    6.38 min.
Rainfall intensity =     2.853(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.030      6.64                 2.794
2        1.009      6.38                 2.854
3        1.104      6.38                 2.853
Largest stream flow has longer time of concentration
Qp =      5.030 + sum of
         Qb         Ia/Ib
          1.009 *    0.979 =      0.988
         Qb         Ia/Ib
          1.104 *    0.979 =      1.082
Qp =      7.100
```

```
Total of 3 streams to confluence:
Flow rates before confluence point:
       5.030       1.009       1.104
Area of streams before confluence:
        2.680        0.420        0.460
Results of confluence:
Total flow rate =      7.100(CFS)
Time of concentration =     6.638 min.
Effective stream area after confluence =      3.560(Ac.)


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Process from Point/Station       22.000 to Point/Station       24.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.600(Ft.)
Downstream point/station elevation =  1480.000(Ft.)
Pipe length  =   138.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.100(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     7.100(CFS)
Normal flow depth in pipe =   12.71(In.)
Flow top width inside pipe =   20.53(In.)
Critical Depth =   11.83(In.)
Pipe flow velocity =      4.66(Ft/s)
Travel time through pipe =    0.50 min.
Time of concentration (TC) =     7.13 min.


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.560(Ac.)
Runoff from this stream =      7.100(CFS)
Time of concentration =    7.13 min.
Rainfall intensity =     2.689(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.100      7.13                 2.689
Largest stream flow has longer time of concentration
Qp =      7.100 + sum of
Qp =      7.100

Total of 1 streams to confluence:
Flow rates before confluence point:
       7.100
Area of streams before confluence:
        3.560
Results of confluence:
Total flow rate =      7.100(CFS)
Time of concentration =     7.134 min.
Effective stream area after confluence =      3.560(Ac.)


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Process from Point/Station       24.200 to Point/Station       24.000
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```
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   197.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.04061  s(percent)=       4.06
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.811 min.
Rainfall intensity =      2.998(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.304(CFS)
Total initial stream area =        0.120(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.120(Ac.)
Runoff from this stream =      0.304(CFS)
Time of concentration =    5.81 min.
Rainfall intensity =     2.998(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.100      7.13                 2.689
2        0.304      5.81                 2.998
Largest stream flow has longer time of concentration
Qp =      7.100 + sum of
         Qb         Ia/Ib
          0.304 *    0.897 =      0.272
Qp =      7.372

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.100       0.304
Area of streams before confluence:
        3.560        0.120
Results of confluence:
Total flow rate =      7.372(CFS)
Time of concentration =     7.134 min.
Effective stream area after confluence =      3.680(Ac.)


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Process from Point/Station       24.100 to Point/Station       24.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   259.000(Ft.)
Top (of initial area) elevation =  1488.300(Ft.)
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Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.300(Ft.)
Slope =    0.03205  s(percent)=       3.20
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.798 min.
Rainfall intensity =      2.759(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.765(CFS)
Total initial stream area =        0.330(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.330(Ac.)
Runoff from this stream =      0.765(CFS)
Time of concentration =    6.80 min.
Rainfall intensity =     2.759(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.100      7.13                 2.689
2        0.304      5.81                 2.998
3        0.765      6.80                 2.759
Largest stream flow has longer time of concentration
Qp =      7.100 + sum of
         Qb         Ia/Ib
          0.304 *    0.897 =      0.272
         Qb         Ia/Ib
          0.765 *    0.975 =      0.746
Qp =      8.118

Total of 3 streams to confluence:
Flow rates before confluence point:
       7.100       0.304       0.765
Area of streams before confluence:
        3.560        0.120        0.330
Results of confluence:
Total flow rate =      8.118(CFS)
Time of concentration =     7.134 min.
Effective stream area after confluence =      4.010(Ac.)


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Process from Point/Station       24.400 to Point/Station       24.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   231.000(Ft.)
Top (of initial area) elevation =  1488.700(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
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```
Difference in elevation =     8.700(Ft.)
Slope =    0.03766  s(percent)=       3.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.287 min.
Rainfall intensity =      2.876(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.017(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.017(CFS)
Time of concentration =    6.29 min.
Rainfall intensity =     2.876(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.100      7.13                 2.689
2        0.304      5.81                 2.998
3        0.765      6.80                 2.759
4        1.017      6.29                 2.876
Largest stream flow has longer time of concentration
Qp =      7.100 + sum of
         Qb         Ia/Ib
          0.304 *    0.897 =      0.272
         Qb         Ia/Ib
          0.765 *    0.975 =      0.746
         Qb         Ia/Ib
          1.017 *    0.935 =      0.951
Qp =      9.069

Total of 4 streams to confluence:
Flow rates before confluence point:
       7.100       0.304       0.765       1.017
Area of streams before confluence:
        3.560        0.120        0.330        0.420
Results of confluence:
Total flow rate =      9.069(CFS)
Time of concentration =     7.134 min.
Effective stream area after confluence =      4.430(Ac.)


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Process from Point/Station       24.000 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.000(Ft.)
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Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =   100.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.069(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     9.069(CFS)
Normal flow depth in pipe =   14.37(In.)
Flow top width inside pipe =   19.52(In.)
Critical Depth =   13.44(In.)
Pipe flow velocity =      5.18(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =     7.46 min.


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Process from Point/Station       24.000 to Point/Station       26.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.430(Ac.)
Runoff from this stream =      9.069(CFS)
Time of concentration =    7.46 min.
Rainfall intensity =     2.627(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        9.069      7.46            2.627
Largest stream flow has longer time of concentration
Qp =      9.069 + sum of
Qp =      9.069

Total of 1 main streams to confluence:
Flow rates before confluence point:
       9.069
Area of streams before confluence:
        4.430


Results of confluence:
Total flow rate =      9.069(CFS)
Time of concentration =     7.458 min.
Effective stream area after confluence  =      4.430(Ac.)


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Process from Point/Station       26.700 to Point/Station       26.600
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   152.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.05263  s(percent)=       5.26
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.247(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.848
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```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.303(CFS)
Total initial stream area =        0.110(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.700 to Point/Station       26.600
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.110(Ac.)
Runoff from this stream =      0.303(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     3.247(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.303      5.00                 3.247
Largest stream flow has longer time of concentration
Qp =      0.303 + sum of
Qp =      0.303

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.303
Area of streams before confluence:
        0.110
Results of confluence:
Total flow rate =      0.303(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence =      0.110(Ac.)


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Process from Point/Station       26.800 to Point/Station       26.600
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   213.000(Ft.)
Top (of initial area) elevation =  1488.200(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.200(Ft.)
Slope =    0.03850  s(percent)=       3.85
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.060 min.
Rainfall intensity =      2.932(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.843
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.038(CFS)
```

```
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.800 to Point/Station       26.600
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.038(CFS)
Time of concentration =    6.06 min.
Rainfall intensity =     2.932(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.303      5.00                 3.247
2        1.038      6.06                 2.932
Largest stream flow has longer time of concentration
Qp =      1.038 + sum of
         Qb         Ia/Ib
          0.303 *    0.903 =      0.273
Qp =      1.312

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.303       1.038
Area of streams before confluence:
        0.110        0.420
Results of confluence:
Total flow rate =      1.312(CFS)
Time of concentration =     6.060 min.
Effective stream area after confluence =      0.530(Ac.)


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Process from Point/Station       26.600 to Point/Station       26.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.000(Ft.)
Downstream point/station elevation =  1479.600(Ft.)
Pipe length  =   114.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.312(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.312(CFS)
Normal flow depth in pipe =    6.87(In.)
Flow top width inside pipe =   11.87(In.)
Critical Depth =    5.80(In.)
Pipe flow velocity =      2.82(Ft/s)
Travel time through pipe =    0.68 min.
Time of concentration (TC) =     6.74 min.


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Process from Point/Station       26.600 to Point/Station       26.300
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.530(Ac.)
Runoff from this stream =      1.312(CFS)
```

```
Time of concentration =    6.74 min.
Rainfall intensity =     2.772(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.312      6.74                 2.772
Largest stream flow has longer time of concentration
Qp =      1.312 + sum of
Qp =      1.312

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.312
Area of streams before confluence:
        0.530
Results of confluence:
Total flow rate =      1.312(CFS)
Time of concentration =     6.737 min.
Effective stream area after confluence =      0.530(Ac.)


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Process from Point/Station       26.500 to Point/Station       26.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =    75.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1479.600(Ft.)
Difference in elevation =     8.400(Ft.)
Slope =    0.11200  s(percent)=      11.20
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.247(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.848
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.165(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.500 to Point/Station       26.300
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.165(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     3.247(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
```

```
 No.       (CFS)       (min)                  (In/Hr)


1        1.312      6.74                 2.772
2        0.165      5.00                 3.247
Largest stream flow has longer time of concentration
Qp =      1.312 + sum of
         Qb         Ia/Ib
          0.165 *    0.854 =      0.141
Qp =      1.452

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.312       0.165
Area of streams before confluence:
        0.530        0.060
Results of confluence:
Total flow rate =      1.452(CFS)
Time of concentration =     6.737 min.
Effective stream area after confluence =      0.590(Ac.)


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Process from Point/Station       26.400 to Point/Station       26.410
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   503.000(Ft.)
Top (of initial area) elevation =  1493.000(Ft.)
Bottom (of initial area) elevation =  1486.900(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.01213  s(percent)=       1.21
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.767 min.
Rainfall intensity =      2.162(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.827
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.823(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.400 to Point/Station       26.300
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.460(Ac.)
Runoff from this stream =      0.823(CFS)
Time of concentration =   10.77 min.
Rainfall intensity =     2.162(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1        1.312      6.74                 2.772
```

```
2        0.165      5.00                 3.247
3        0.823     10.77                 2.162
Largest stream flow has longer or shorter time of concentration
Qp =      1.312 + sum of
         Qb         Ia/Ib
          0.165 *    0.854 =      0.141
         Qa          Tb/Ta
          0.823 *    0.626 =      0.515
Qp =      1.967

Total of 3 streams to confluence:
Flow rates before confluence point:
       1.312       0.165       0.823
Area of streams before confluence:
        0.530        0.060        0.460
Results of confluence:
Total flow rate =      1.967(CFS)
Time of concentration =     6.737 min.
Effective stream area after confluence =      1.050(Ac.)


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Process from Point/Station       26.200 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.600(Ft.)
Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =    15.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.967(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.967(CFS)
Normal flow depth in pipe =    7.27(In.)
Flow top width inside pipe =   11.73(In.)
Critical Depth =    7.17(In.)
Pipe flow velocity =      3.96(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     6.80 min.


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Process from Point/Station       26.200 to Point/Station       26.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.050(Ac.)
Runoff from this stream =      1.967(CFS)
Time of concentration =    6.80 min.
Rainfall intensity =     2.758(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.967      6.80                 2.758
Largest stream flow has longer time of concentration
Qp =      1.967 + sum of
Qp =      1.967

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.967
Area of streams before confluence:
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```
        1.050
Results of confluence:
Total flow rate =      1.967(CFS)
Time of concentration =     6.801 min.
Effective stream area after confluence =      1.050(Ac.)


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Process from Point/Station       26.200 to Point/Station       26.210
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   372.000(Ft.)
Top (of initial area) elevation =  1491.000(Ft.)
Bottom (of initial area) elevation =  1286.900(Ft.)
Difference in elevation =   204.100(Ft.)
Slope =    0.54866  s(percent)=      54.87
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.247(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.848
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.183(CFS)
Total initial stream area =        0.430(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.100 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.800(Ft.)
Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.183(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.183(CFS)
Normal flow depth in pipe =    4.62(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    6.00(In.)
Pipe flow velocity =      5.18(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     5.05 min.


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Process from Point/Station       26.100 to Point/Station       26.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.430(Ac.)
Runoff from this stream =      1.183(CFS)
Time of concentration =    5.05 min.
Rainfall intensity =     3.229(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.967      6.80                 2.758
2        1.183      5.05                 3.229
Largest stream flow has longer time of concentration
Qp =      1.967 + sum of
         Qb         Ia/Ib
          1.183 *    0.854 =      1.011
Qp =      2.978

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.967       1.183
Area of streams before confluence:
        1.050        0.430
Results of confluence:
Total flow rate =      2.978(CFS)
Time of concentration =     6.801 min.
Effective stream area after confluence =      1.480(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       24.000 to Point/Station       26.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.480(Ac.)
Runoff from this stream =      2.978(CFS)
Time of concentration =    6.80 min.
Rainfall intensity =     2.758(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        9.069      7.46            2.627
2        2.978      6.80            2.758
Largest stream flow has longer time of concentration
Qp =      9.069 + sum of
         Qb         Ia/Ib
          2.978 *    0.952 =      2.836
Qp =     11.905

Total of 2 main streams to confluence:
Flow rates before confluence point:
       9.069       2.978
Area of streams before confluence:
        4.430        1.480


Results of confluence:
Total flow rate =     11.905(CFS)
Time of concentration =     7.458 min.
Effective stream area after confluence  =      5.910(Ac.)


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Process from Point/Station       26.000 to Point/Station       28.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

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____________________________________________________________________
Upstream point/station elevation =  1479.500(Ft.)
Downstream point/station elevation =  1479.300(Ft.)
Pipe length  =    39.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.905(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.905(CFS)
Normal flow depth in pipe =   15.35(In.)
Flow top width inside pipe =   23.04(In.)
Critical Depth =   14.87(In.)
Pipe flow velocity =      5.61(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     7.58 min.


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Process from Point/Station       26.000 to Point/Station       28.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.910(Ac.)
Runoff from this stream =     11.905(CFS)
Time of concentration =    7.58 min.
Rainfall intensity =     2.605(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.905      7.58                 2.605
Largest stream flow has longer time of concentration
Qp =     11.905 + sum of
Qp =     11.905

Total of 1 streams to confluence:
Flow rates before confluence point:
      11.905
Area of streams before confluence:
        5.910
Results of confluence:
Total flow rate =     11.905(CFS)
Time of concentration =     7.575 min.
Effective stream area after confluence =      5.910(Ac.)


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Process from Point/Station       28.100 to Point/Station       28.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   218.000(Ft.)
Top (of initial area) elevation =  1486.000(Ft.)
Bottom (of initial area) elevation =  1479.300(Ft.)
Difference in elevation =     6.700(Ft.)
Slope =    0.03073  s(percent)=       3.07
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.398 min.
Rainfall intensity =      2.849(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
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Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.863(CFS)
Total initial stream area =        0.360(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.000 to Point/Station       28.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.360(Ac.)
Runoff from this stream =      0.863(CFS)
Time of concentration =    6.40 min.
Rainfall intensity =     2.849(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.905      7.58                 2.605
2        0.863      6.40                 2.849
Largest stream flow has longer time of concentration
Qp =     11.905 + sum of
         Qb         Ia/Ib
          0.863 *    0.914 =      0.789
Qp =     12.694

Total of 2 streams to confluence:
Flow rates before confluence point:
      11.905       0.863
Area of streams before confluence:
        5.910        0.360
Results of confluence:
Total flow rate =     12.694(CFS)
Time of concentration =     7.575 min.
Effective stream area after confluence =      6.270(Ac.)


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Process from Point/Station       28.000 to Point/Station       30.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.300(Ft.)
Downstream point/station elevation =  1478.800(Ft.)
Pipe length  =    80.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.694(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    12.694(CFS)
Normal flow depth in pipe =   17.58(In.)
Flow top width inside pipe =   15.51(In.)
Critical Depth =   15.93(In.)
Pipe flow velocity =      5.91(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     7.80 min.


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Process from Point/Station       28.000 to Point/Station       30.000
**** CONFLUENCE OF MINOR STREAMS ****
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____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.270(Ac.)
Runoff from this stream =     12.694(CFS)
Time of concentration =    7.80 min.
Rainfall intensity =     2.565(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       12.694      7.80                 2.565
Largest stream flow has longer time of concentration
Qp =     12.694 + sum of
Qp =     12.694

Total of 1 streams to confluence:
Flow rates before confluence point:
      12.694
Area of streams before confluence:
        6.270
Results of confluence:
Total flow rate =     12.694(CFS)
Time of concentration =     7.803 min.
Effective stream area after confluence =      6.270(Ac.)


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Process from Point/Station       30.100 to Point/Station       30.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   130.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1478.800(Ft.)
Difference in elevation =     5.500(Ft.)
Slope =    0.04231  s(percent)=       4.23
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.247(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.848
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.165(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       30.100 to Point/Station       30.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.165(CFS)
Time of concentration =    5.00 min.
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```
Rainfall intensity =     3.247(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       12.694      7.80                 2.565
2        0.165      5.00                 3.247
Largest stream flow has longer time of concentration
Qp =     12.694 + sum of
         Qb         Ia/Ib
          0.165 *    0.790 =      0.130
Qp =     12.825

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.694       0.165
Area of streams before confluence:
        6.270        0.060
Results of confluence:
Total flow rate =     12.825(CFS)
Time of concentration =     7.803 min.
Effective stream area after confluence =      6.330(Ac.)


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Process from Point/Station       30.200 to Point/Station       30.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   130.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1478.800(Ft.)
Difference in elevation =     5.500(Ft.)
Slope =    0.04231  s(percent)=       4.23
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.247(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.848
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.165(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       28.000 to Point/Station       30.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.165(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     3.247(In/Hr)
Summary of stream data:
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```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       12.694      7.80                 2.565
2        0.165      5.00                 3.247
3        0.165      5.00                 3.247
Largest stream flow has longer time of concentration
Qp =     12.694 + sum of
         Qb         Ia/Ib
          0.165 *    0.790 =      0.130
         Qb         Ia/Ib
          0.165 *    0.790 =      0.130
Qp =     12.955

Total of 3 streams to confluence:
Flow rates before confluence point:
      12.694       0.165       0.165
Area of streams before confluence:
        6.270        0.060        0.060
Results of confluence:
Total flow rate =     12.955(CFS)
Time of concentration =     7.803 min.
Effective stream area after confluence =      6.390(Ac.)


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Process from Point/Station       30.000 to Point/Station       32.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.800(Ft.)
Downstream point/station elevation =  1478.400(Ft.)
Pipe length  =    91.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.955(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    12.955(CFS)
Normal flow depth in pipe =   17.27(In.)
Flow top width inside pipe =   21.56(In.)
Critical Depth =   15.54(In.)
Pipe flow velocity =      5.35(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     8.09 min.


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Process from Point/Station       30.000 to Point/Station       32.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.390(Ac.)
Runoff from this stream =     12.955(CFS)
Time of concentration =    8.09 min.
Rainfall intensity =     2.516(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       12.955      8.09                 2.516
Largest stream flow has longer time of concentration
Qp =     12.955 + sum of
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```
Qp =     12.955

Total of 1 streams to confluence:
Flow rates before confluence point:
      12.955
Area of streams before confluence:
        6.390
Results of confluence:
Total flow rate =     12.955(CFS)
Time of concentration =     8.089 min.
Effective stream area after confluence =      6.390(Ac.)


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Process from Point/Station       32.200 to Point/Station       32.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   368.000(Ft.)
Top (of initial area) elevation =  1490.500(Ft.)
Bottom (of initial area) elevation =  1478.800(Ft.)
Difference in elevation =    11.700(Ft.)
Slope =    0.03179  s(percent)=       3.18
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.836 min.
Rainfall intensity =      2.559(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.836
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.348(CFS)
Total initial stream area =        0.630(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.100 to Point/Station       32.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.800(Ft.)
Downstream point/station elevation =  1478.400(Ft.)
Pipe length  =    49.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.348(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.348(CFS)
Normal flow depth in pipe =    6.73(In.)
Flow top width inside pipe =    7.82(In.)
Critical Depth =    6.42(In.)
Pipe flow velocity =      3.81(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     8.05 min.


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Process from Point/Station       32.000 to Point/Station       32.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.630(Ac.)
Runoff from this stream =      1.348(CFS)
```

```
Time of concentration =    8.05 min.
Rainfall intensity =     2.522(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       12.955      8.09                 2.516
2        1.348      8.05                 2.522
Largest stream flow has longer time of concentration
Qp =     12.955 + sum of
         Qb         Ia/Ib
          1.348 *    0.998 =      1.345
Qp =     14.300

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.955       1.348
Area of streams before confluence:
        6.390        0.630
Results of confluence:
Total flow rate =     14.300(CFS)
Time of concentration =     8.089 min.
Effective stream area after confluence =      7.020(Ac.)


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Process from Point/Station       32.000 to Point/Station       32.500
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.400(Ft.)
Downstream point/station elevation =  1478.350(Ft.)
Pipe length  =    13.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.300(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    14.300(CFS)
Normal flow depth in pipe =   20.63(In.)
Flow top width inside pipe =   16.69(In.)
Critical Depth =   16.35(In.)
Pipe flow velocity =      4.98(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     8.13 min.


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Process from Point/Station       32.000 to Point/Station       32.500
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.020(Ac.)
Runoff from this stream =     14.300(CFS)
Time of concentration =    8.13 min.
Rainfall intensity =     2.509(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.300      8.13                 2.509
Largest stream flow has longer time of concentration
Qp =     14.300 + sum of
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```
Qp =     14.300

Total of 1 streams to confluence:
Flow rates before confluence point:
      14.300
Area of streams before confluence:
        7.020
Results of confluence:
Total flow rate =     14.300(CFS)
Time of concentration =     8.134 min.
Effective stream area after confluence =      7.020(Ac.)


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Process from Point/Station       32.400 to Point/Station       32.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   220.000(Ft.)
Top (of initial area) elevation =  1484.700(Ft.)
Bottom (of initial area) elevation =  1478.600(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.02773  s(percent)=       2.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.555 min.
Rainfall intensity =      2.813(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.841
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.804(CFS)
Total initial stream area =        0.340(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.300 to Point/Station       32.500
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.620(Ft.)
Downstream point/station elevation =  1478.350(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.804(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.804(CFS)
Normal flow depth in pipe =    3.88(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    4.91(In.)
Pipe flow velocity =      4.41(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     6.62 min.


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Process from Point/Station       32.000 to Point/Station       32.500
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.340(Ac.)
Runoff from this stream =      0.804(CFS)
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Time of concentration =    6.62 min.
Rainfall intensity =     2.798(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.300      8.13                 2.509
2        0.804      6.62                 2.798
Largest stream flow has longer time of concentration
Qp =     14.300 + sum of
         Qb         Ia/Ib
          0.804 *    0.897 =      0.721
Qp =     15.021

Total of 2 streams to confluence:
Flow rates before confluence point:
      14.300       0.804
Area of streams before confluence:
        7.020        0.340
Results of confluence:
Total flow rate =     15.021(CFS)
Time of concentration =     8.134 min.
Effective stream area after confluence =      7.360(Ac.)


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Process from Point/Station       32.400 to Point/Station       32.410
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   562.000(Ft.)
Top (of initial area) elevation =  1488.400(Ft.)
Bottom (of initial area) elevation =  1478.500(Ft.)
Difference in elevation =     9.900(Ft.)
Slope =    0.01762  s(percent)=       1.76
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.445 min.
Rainfall intensity =      2.197(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.828
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.783(CFS)
Total initial stream area =        0.430(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.300 to Point/Station       32.500
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.600(Ft.)
Downstream point/station elevation =  1478.350(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.783(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.783(CFS)
Normal flow depth in pipe =    3.90(In.)
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Flow top width inside pipe =    8.92(In.)
Critical Depth =    4.84(In.)
Pipe flow velocity =      4.26(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    10.51 min.


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Process from Point/Station       32.000 to Point/Station       32.500
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.430(Ac.)
Runoff from this stream =      0.783(CFS)
Time of concentration =   10.51 min.
Rainfall intensity =     2.190(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.300      8.13                 2.509
2        0.804      6.62                 2.798
3        0.783     10.51                 2.190
Largest stream flow has longer or shorter time of concentration
Qp =     14.300 + sum of
         Qb         Ia/Ib
          0.804 *    0.897 =      0.721
         Qa          Tb/Ta
          0.783 *    0.774 =      0.606
Qp =     15.627

Total of 3 streams to confluence:
Flow rates before confluence point:
      14.300       0.804       0.783
Area of streams before confluence:
        7.020        0.340        0.430
Results of confluence:
Total flow rate =     15.627(CFS)
Time of concentration =     8.134 min.
Effective stream area after confluence =      7.790(Ac.)


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Process from Point/Station       32.500 to Point/Station       34.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.350(Ft.)
Downstream point/station elevation =  1477.800(Ft.)
Pipe length  =   119.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.627(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    15.627(CFS)
Normal flow depth in pipe =   20.11(In.)
Flow top width inside pipe =   17.69(In.)
Critical Depth =   17.10(In.)
Pipe flow velocity =      5.56(Ft/s)
Travel time through pipe =    0.36 min.
Time of concentration (TC) =     8.49 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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Process from Point/Station       34.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.790(Ac.)
Runoff from this stream =     15.627(CFS)
Time of concentration =    8.49 min.
Rainfall intensity =     2.452(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       15.627      8.49                 2.452
Largest stream flow has longer time of concentration
Qp =     15.627 + sum of
Qp =     15.627

Total of 1 streams to confluence:
Flow rates before confluence point:
      15.627
Area of streams before confluence:
        7.790
Results of confluence:
Total flow rate =     15.627(CFS)
Time of concentration =     8.492 min.
Effective stream area after confluence =      7.790(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       34.200 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   150.000(Ft.)
Top (of initial area) elevation =  1482.100(Ft.)
Bottom (of initial area) elevation =  1477.700(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.02933  s(percent)=       2.93
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.561 min.
Rainfall intensity =      3.069(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.845
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.156(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.156(CFS)
Time of concentration =    5.56 min.
```

```
Rainfall intensity =     3.069(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       15.627      8.49                 2.452
2        0.156      5.56                 3.069
Largest stream flow has longer time of concentration
Qp =     15.627 + sum of
         Qb         Ia/Ib
          0.156 *    0.799 =      0.124
Qp =     15.751

Total of 2 streams to confluence:
Flow rates before confluence point:
      15.627       0.156
Area of streams before confluence:
        7.790        0.060
Results of confluence:
Total flow rate =     15.751(CFS)
Time of concentration =     8.492 min.
Effective stream area after confluence =      7.850(Ac.)


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Process from Point/Station       34.300 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   150.000(Ft.)
Top (of initial area) elevation =  1482.100(Ft.)
Bottom (of initial area) elevation =  1477.700(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.02933  s(percent)=       2.93
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.561 min.
Rainfall intensity =      3.069(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.845
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.156(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.156(CFS)
Time of concentration =    5.56 min.
Rainfall intensity =     3.069(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
```

```
 No.       (CFS)       (min)                  (In/Hr)


1       15.627      8.49                 2.452
2        0.156      5.56                 3.069
3        0.156      5.56                 3.069
Largest stream flow has longer time of concentration
Qp =     15.627 + sum of
         Qb         Ia/Ib
          0.156 *    0.799 =      0.124
         Qb         Ia/Ib
          0.156 *    0.799 =      0.124
Qp =     15.875

Total of 3 streams to confluence:
Flow rates before confluence point:
      15.627       0.156       0.156
Area of streams before confluence:
        7.790        0.060        0.060
Results of confluence:
Total flow rate =     15.875(CFS)
Time of concentration =     8.492 min.
Effective stream area after confluence =      7.910(Ac.)


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Process from Point/Station       34.100 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   226.000(Ft.)
Top (of initial area) elevation =  1485.300(Ft.)
Bottom (of initial area) elevation =  1477.700(Ft.)
Difference in elevation =     7.600(Ft.)
Slope =    0.03363  s(percent)=       3.36
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.375 min.
Rainfall intensity =      2.855(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.817(CFS)
Total initial stream area =        0.340(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.340(Ac.)
Runoff from this stream =      0.817(CFS)
Time of concentration =    6.38 min.
Rainfall intensity =     2.855(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)
```

```
1       15.627      8.49                 2.452
2        0.156      5.56                 3.069
3        0.156      5.56                 3.069
4        0.817      6.38                 2.855
Largest stream flow has longer time of concentration
Qp =     15.627 + sum of
         Qb         Ia/Ib
          0.156 *    0.799 =      0.124
         Qb         Ia/Ib
          0.156 *    0.799 =      0.124
         Qb         Ia/Ib
          0.817 *    0.859 =      0.702
Qp =     16.577

Total of 4 streams to confluence:
Flow rates before confluence point:
      15.627       0.156       0.156       0.817
Area of streams before confluence:
        7.790        0.060        0.060        0.340
Results of confluence:
Total flow rate =     16.577(CFS)
Time of concentration =     8.492 min.
Effective stream area after confluence =      8.250(Ac.)


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Process from Point/Station       34.000 to Point/Station       36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.700(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    74.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.577(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    16.577(CFS)
Normal flow depth in pipe =   19.01(In.)
Flow top width inside pipe =   24.65(In.)
Critical Depth =   17.06(In.)
Pipe flow velocity =      5.54(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     8.72 min.


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Process from Point/Station       34.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.250(Ac.)
Runoff from this stream =     16.577(CFS)
Time of concentration =    8.72 min.
Rainfall intensity =     2.419(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1       16.577      8.72                 2.419
Largest stream flow has longer time of concentration
Qp =     16.577 + sum of
```

```
Qp =     16.577

Total of 1 streams to confluence:
Flow rates before confluence point:
      16.577
Area of streams before confluence:
        8.250
Results of confluence:
Total flow rate =     16.577(CFS)
Time of concentration =     8.716 min.
Effective stream area after confluence =      8.250(Ac.)


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Process from Point/Station       36.200 to Point/Station       36.210
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   680.000(Ft.)
Top (of initial area) elevation =  1488.400(Ft.)
Bottom (of initial area) elevation =  1480.700(Ft.)
Difference in elevation =     7.700(Ft.)
Slope =    0.01132  s(percent)=       1.13
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.314 min.
Rainfall intensity =      2.014(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.823
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.630(CFS)
Total initial stream area =        0.380(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       36.100 to Point/Station       36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.600(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    14.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.630(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.630(CFS)
Normal flow depth in pipe =    4.62(In.)
Flow top width inside pipe =    5.05(In.)
Critical Depth =    4.83(In.)
Pipe flow velocity =      3.88(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    12.37 min.


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Process from Point/Station       34.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.380(Ac.)
Runoff from this stream =      0.630(CFS)
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```
Time of concentration =   12.37 min.
Rainfall intensity =     2.009(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.577      8.72                 2.419
2        0.630     12.37                 2.009
Largest stream flow has longer or shorter time of concentration
Qp =     16.577 + sum of
         Qa          Tb/Ta
          0.630 *    0.704 =      0.444
Qp =     17.021

Total of 2 streams to confluence:
Flow rates before confluence point:
      16.577       0.630
Area of streams before confluence:
        8.250        0.380
Results of confluence:
Total flow rate =     17.021(CFS)
Time of concentration =     8.716 min.
Effective stream area after confluence =      8.630(Ac.)


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Process from Point/Station       32.300 to Point/Station       32.310
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =  1482.500(Ft.)
Bottom (of initial area) elevation =  1480.100(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.00819  s(percent)=       0.82
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.382 min.
Rainfall intensity =      2.326(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.831
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.793(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       38.100 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
Pipe length  =    12.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.793(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.793(CFS)
Normal flow depth in pipe =    3.80(In.)
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Flow top width inside pipe =    8.89(In.)
Critical Depth =    4.87(In.)
Pipe flow velocity =      4.48(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.43 min.


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Process from Point/Station       36.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.410(Ac.)
Runoff from this stream =      0.793(CFS)
Time of concentration =    9.43 min.
Rainfall intensity =     2.320(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.577      8.72                 2.419
2        0.793      9.43                 2.320
Largest stream flow has longer or shorter time of concentration
Qp =     16.577 + sum of
         Qa          Tb/Ta
          0.793 *    0.925 =      0.733
Qp =     17.310

Total of 2 streams to confluence:
Flow rates before confluence point:
      16.577       0.793
Area of streams before confluence:
        8.250        0.410
Results of confluence:
Total flow rate =     17.310(CFS)
Time of concentration =     8.716 min.
Effective stream area after confluence =      8.660(Ac.)


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Process from Point/Station       36.000 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.200(Ft.)
Downstream point/station elevation =  1477.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.310(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.310(CFS)
Normal flow depth in pipe =   18.12(In.)
Flow top width inside pipe =   25.37(In.)
Critical Depth =   17.44(In.)
Pipe flow velocity =      6.11(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     8.83 min.
End of computations, total study area =            9.04 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.341
Area averaged RI index number =  67.3
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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/21/18  File:27259RAT294310.out
------------------------------------------------------------------------
  PM #13523
MILL CREEK PROMENADE
AREA A Q10 (ONSITE-East side)

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

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Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       29.600 to Point/Station       29.500
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   189.000(Ft.)
Top (of initial area) elevation =  1491.700(Ft.)
Bottom (of initial area) elevation =  1481.200(Ft.)
Difference in elevation =    10.500(Ft.)
Slope =    0.05556  s(percent)=       5.56
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.368 min.
Rainfall intensity =      3.127(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.846
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
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Initial subarea runoff =      0.873(CFS)
Total initial stream area =        0.330(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       29.500 to Point/Station       29.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.200(Ft.)
Downstream point/station elevation =  1480.800(Ft.)
Pipe length  =   144.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.873(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     0.873(CFS)
Normal flow depth in pipe =    5.76(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =    4.70(In.)
Pipe flow velocity =      2.34(Ft/s)
Travel time through pipe =    1.03 min.
Time of concentration (TC) =     6.40 min.


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Process from Point/Station       29.500 to Point/Station       29.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.330(Ac.)
Runoff from this stream =      0.873(CFS)
Time of concentration =    6.40 min.
Rainfall intensity =     2.849(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.873      6.40                 2.849
Largest stream flow has longer time of concentration
Qp =      0.873 + sum of
Qp =      0.873

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.873
Area of streams before confluence:
        0.330
Results of confluence:
Total flow rate =      0.873(CFS)
Time of concentration =     6.399 min.
Effective stream area after confluence =      0.330(Ac.)


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Process from Point/Station       29.400 to Point/Station       29.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   217.000(Ft.)
Top (of initial area) elevation =  1492.500(Ft.)
Bottom (of initial area) elevation =  1481.400(Ft.)
Difference in elevation =    11.100(Ft.)
Slope =    0.05115  s(percent)=       5.12
```

```
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.768 min.
Rainfall intensity =      3.010(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.889(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       29.300 to Point/Station       29.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.400(Ft.)
Downstream point/station elevation =  1480.800(Ft.)
Pipe length  =    59.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.889(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.889(CFS)
Normal flow depth in pipe =    4.68(In.)
Flow top width inside pipe =    8.99(In.)
Critical Depth =    5.18(In.)
Pipe flow velocity =      3.83(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     6.03 min.


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Process from Point/Station       29.500 to Point/Station       29.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.350(Ac.)
Runoff from this stream =      0.889(CFS)
Time of concentration =    6.03 min.
Rainfall intensity =     2.941(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.873      6.40                 2.849
2        0.889      6.03                 2.941
Largest stream flow has longer or shorter time of concentration
Qp =      0.889 + sum of
         Qa          Tb/Ta
          0.873 *    0.942 =      0.822
Qp =      1.711

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.873       0.889
Area of streams before confluence:
        0.330        0.350
Results of confluence:
```

```
Total flow rate =      1.711(CFS)
Time of concentration =     6.027 min.
Effective stream area after confluence =      0.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       29.200 to Point/Station       29.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.800(Ft.)
Downstream point/station elevation =  1480.000(Ft.)
Pipe length  =    91.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.711(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.711(CFS)
Normal flow depth in pipe =    6.11(In.)
Flow top width inside pipe =   12.00(In.)
Critical Depth =    6.68(In.)
Pipe flow velocity =      4.26(Ft/s)
Travel time through pipe =    0.36 min.
Time of concentration (TC) =     6.39 min.


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Process from Point/Station       29.200 to Point/Station       29.100
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.680(Ac.)
Runoff from this stream =      1.711(CFS)
Time of concentration =    6.39 min.
Rainfall intensity =     2.852(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.711      6.39                 2.852
Largest stream flow has longer time of concentration
Qp =      1.711 + sum of
Qp =      1.711

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.711
Area of streams before confluence:
        0.680
Results of confluence:
Total flow rate =      1.711(CFS)
Time of concentration =     6.386 min.
Effective stream area after confluence =      0.680(Ac.)


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Process from Point/Station       29.110 to Point/Station       29.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   189.000(Ft.)
Top (of initial area) elevation =  1487.800(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     7.800(Ft.)
Slope =    0.04127  s(percent)=       4.13
```

```
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.697 min.
Rainfall intensity =      3.030(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.844(CFS)
Total initial stream area =        0.330(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       29.200 to Point/Station       29.100
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.330(Ac.)
Runoff from this stream =      0.844(CFS)
Time of concentration =    5.70 min.
Rainfall intensity =     3.030(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.711      6.39                 2.852
2        0.844      5.70                 3.030
Largest stream flow has longer time of concentration
Qp =      1.711 + sum of
         Qb         Ia/Ib
          0.844 *    0.941 =      0.795
Qp =      2.506

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.711       0.844
Area of streams before confluence:
        0.680        0.330
Results of confluence:
Total flow rate =      2.506(CFS)
Time of concentration =     6.386 min.
Effective stream area after confluence =      1.010(Ac.)


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Process from Point/Station       29.100 to Point/Station       29.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.000(Ft.)
Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =   101.60(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.506(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     2.506(CFS)
Normal flow depth in pipe =    7.97(In.)
Flow top width inside pipe =   14.97(In.)
Critical Depth =    7.61(In.)
```

```
Pipe flow velocity =      3.79(Ft/s)
Travel time through pipe =    0.45 min.
Time of concentration (TC) =     6.83 min.


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Process from Point/Station       29.100 to Point/Station       29.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.010(Ac.)
Runoff from this stream =      2.506(CFS)
Time of concentration =    6.83 min.
Rainfall intensity =     2.752(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.506      6.83                 2.752
Largest stream flow has longer time of concentration
Qp =      2.506 + sum of
Qp =      2.506

Total of 1 streams to confluence:
Flow rates before confluence point:
       2.506
Area of streams before confluence:
        1.010
Results of confluence:
Total flow rate =      2.506(CFS)
Time of concentration =     6.833 min.
Effective stream area after confluence =      1.010(Ac.)


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Process from Point/Station       27.000 to Point/Station       29.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________
Rainfall intensity =      2.378(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
User specified values are as follows:
TC =   9.00 min.  Rain intensity =       2.38(In/Hr)
Total area =         5.86(Ac.)  Total runoff =     11.75(CFS)


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Process from Point/Station       29.000 to Point/Station       29.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.860(Ac.)
Runoff from this stream =     11.750(CFS)
Time of concentration =    9.00 min.
Rainfall intensity =     2.378(In/Hr)
```

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Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.506      6.83                 2.752
2       11.750      9.00                 2.378
Largest stream flow has longer time of concentration
Qp =     11.750 + sum of
         Qb         Ia/Ib
          2.506 *    0.864 =      2.166
Qp =     13.916

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.506      11.750
Area of streams before confluence:
        1.010        5.860
Results of confluence:
Total flow rate =     13.916(CFS)
Time of concentration =     9.000 min.
Effective stream area after confluence =      6.870(Ac.)


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Process from Point/Station       29.000 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.500(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    86.10(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.916(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    13.916(CFS)
Normal flow depth in pipe =   17.84(In.)
Flow top width inside pipe =   20.97(In.)
Critical Depth =   16.11(In.)
Pipe flow velocity =      5.56(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     9.26 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.870(Ac.)
Runoff from this stream =     13.916(CFS)
Time of concentration =    9.26 min.
Rainfall intensity =     2.342(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.916      9.26                 2.342
Largest stream flow has longer time of concentration
Qp =     13.916 + sum of
Qp =     13.916
```

```
Total of 1 streams to confluence:
Flow rates before confluence point:
      13.916
Area of streams before confluence:
        6.870
Results of confluence:
Total flow rate =     13.916(CFS)
Time of concentration =     9.258 min.
Effective stream area after confluence =      6.870(Ac.)


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Process from Point/Station       31.300 to Point/Station       31.310
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   527.000(Ft.)
Top (of initial area) elevation =  1491.600(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =     7.600(Ft.)
Slope =    0.01442  s(percent)=       1.44
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.596 min.
Rainfall intensity =      2.181(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.828
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.444(CFS)
Total initial stream area =        0.800(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.200 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.300(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.444(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.444(CFS)
Normal flow depth in pipe =    5.81(In.)
Flow top width inside pipe =    8.61(In.)
Critical Depth =    6.64(In.)
Pipe flow velocity =      4.79(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    10.65 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.800(Ac.)
Runoff from this stream =      1.444(CFS)
Time of concentration =   10.65 min.
Rainfall intensity =     2.175(In/Hr)
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Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.916      9.26                 2.342
2        1.444     10.65                 2.175
Largest stream flow has longer or shorter time of concentration
Qp =     13.916 + sum of
         Qa          Tb/Ta
          1.444 *    0.870 =      1.256
Qp =     15.172

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.916       1.444
Area of streams before confluence:
        6.870        0.800
Results of confluence:
Total flow rate =     15.172(CFS)
Time of concentration =     9.258 min.
Effective stream area after confluence =      7.670(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       31.500 to Point/Station       31.510
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   313.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.01278  s(percent)=       1.28
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.813 min.
Rainfall intensity =      2.405(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.833
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.681(CFS)
Total initial stream area =        0.340(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.100 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.300(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.681(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.681(CFS)
Normal flow depth in pipe =    3.69(In.)
Flow top width inside pipe =    8.85(In.)
Critical Depth =    4.51(In.)
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Pipe flow velocity =      3.99(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     8.87 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.340(Ac.)
Runoff from this stream =      0.681(CFS)
Time of concentration =    8.87 min.
Rainfall intensity =     2.396(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.916      9.26                 2.342
2        1.444     10.65                 2.175
3        0.681      8.87                 2.396
Largest stream flow has longer or shorter time of concentration
Qp =     13.916 + sum of
         Qa          Tb/Ta
          1.444 *    0.870 =      1.256
         Qb         Ia/Ib
          0.681 *    0.978 =      0.666
Qp =     15.837

Total of 3 streams to confluence:
Flow rates before confluence point:
      13.916       1.444       0.681
Area of streams before confluence:
        6.870        0.800        0.340
Results of confluence:
Total flow rate =     15.837(CFS)
Time of concentration =     9.258 min.
Effective stream area after confluence =      8.010(Ac.)


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Process from Point/Station       31.400 to Point/Station       31.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   246.000(Ft.)
Top (of initial area) elevation =  1486.500(Ft.)
Bottom (of initial area) elevation =  1479.400(Ft.)
Difference in elevation =     7.100(Ft.)
Slope =    0.02886  s(percent)=       2.89
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.800 min.
Rainfall intensity =      2.759(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.996(CFS)
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Total initial stream area =        0.430(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.100 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.400(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.996(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.996(CFS)
Normal flow depth in pipe =    4.08(In.)
Flow top width inside pipe =    8.96(In.)
Critical Depth =    5.49(In.)
Pipe flow velocity =      5.12(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     6.85 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.430(Ac.)
Runoff from this stream =      0.996(CFS)
Time of concentration =    6.85 min.
Rainfall intensity =     2.748(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.916      9.26                 2.342
2        1.444     10.65                 2.175
3        0.681      8.87                 2.396
4        0.996      6.85                 2.748
Largest stream flow has longer or shorter time of concentration
Qp =     13.916 + sum of
         Qa          Tb/Ta
          1.444 *    0.870 =      1.256
         Qb         Ia/Ib
          0.681 *    0.978 =      0.666
         Qb         Ia/Ib
          0.996 *    0.852 =      0.849
Qp =     16.687

Total of 4 streams to confluence:
Flow rates before confluence point:
      13.916       1.444       0.681       0.996
Area of streams before confluence:
        6.870        0.800        0.340        0.430
Results of confluence:
Total flow rate =     16.687(CFS)
Time of concentration =     9.258 min.
Effective stream area after confluence =      8.440(Ac.)


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Process from Point/Station       31.000 to Point/Station       33.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.100(Ft.)
Downstream point/station elevation =  1478.600(Ft.)
Pipe length  =   106.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.687(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    16.687(CFS)
Normal flow depth in pipe =   18.07(In.)
Flow top width inside pipe =   25.41(In.)
Critical Depth =   17.11(In.)
Pipe flow velocity =      5.90(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =     9.56 min.


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Process from Point/Station       33.100 to Point/Station       33.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   241.000(Ft.)
Top (of initial area) elevation =  1485.100(Ft.)
Bottom (of initial area) elevation =  1478.600(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.02697  s(percent)=       2.70
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.836 min.
Rainfall intensity =      2.751(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.970(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.000 to Point/Station       33.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      0.970(CFS)
Time of concentration =    6.84 min.
Rainfall intensity =     2.751(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.916      9.26                 2.342
2        0.970      6.84                 2.751
Largest stream flow has longer time of concentration
Qp =     13.916 + sum of
         Qb         Ia/Ib
          0.970 *    0.852 =      0.826
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Qp =     14.742

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.916       0.970
Area of streams before confluence:
        6.870        0.420
Results of confluence:
Total flow rate =     14.742(CFS)
Time of concentration =     9.258 min.
Effective stream area after confluence =      7.290(Ac.)


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Process from Point/Station       33.000 to Point/Station       35.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.600(Ft.)
Downstream point/station elevation =  1478.100(Ft.)
Pipe length  =    90.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.742(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    14.742(CFS)
Normal flow depth in pipe =   17.39(In.)
Flow top width inside pipe =   21.44(In.)
Critical Depth =   16.59(In.)
Pipe flow velocity =      6.04(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =     9.51 min.


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Process from Point/Station       33.000 to Point/Station       35.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.290(Ac.)
Runoff from this stream =     14.742(CFS)
Time of concentration =    9.51 min.
Rainfall intensity =     2.310(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.742      9.51                 2.310
Largest stream flow has longer time of concentration
Qp =     14.742 + sum of
Qp =     14.742

Total of 1 streams to confluence:
Flow rates before confluence point:
      14.742
Area of streams before confluence:
        7.290
Results of confluence:
Total flow rate =     14.742(CFS)
Time of concentration =     9.507 min.
Effective stream area after confluence =      7.290(Ac.)


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Process from Point/Station       35.100 to Point/Station       35.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   242.000(Ft.)
Top (of initial area) elevation =  1484.200(Ft.)
Bottom (of initial area) elevation =  1478.100(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.02521  s(percent)=       2.52
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.941 min.
Rainfall intensity =      2.729(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.839
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.985(CFS)
Total initial stream area =        0.430(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       33.000 to Point/Station       35.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.430(Ac.)
Runoff from this stream =      0.985(CFS)
Time of concentration =    6.94 min.
Rainfall intensity =     2.729(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.742      9.51                 2.310
2        0.985      6.94                 2.729
Largest stream flow has longer time of concentration
Qp =     14.742 + sum of
         Qb         Ia/Ib
          0.985 *    0.846 =      0.834
Qp =     15.576

Total of 2 streams to confluence:
Flow rates before confluence point:
      14.742       0.985
Area of streams before confluence:
        7.290        0.430
Results of confluence:
Total flow rate =     15.576(CFS)
Time of concentration =     9.507 min.
Effective stream area after confluence =      7.720(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       35.000 to Point/Station       37.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.100(Ft.)
```

```
Downstream point/station elevation =  1477.900(Ft.)
Pipe length  =    48.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.576(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    15.576(CFS)
Normal flow depth in pipe =   17.95(In.)
Flow top width inside pipe =   25.49(In.)
Critical Depth =   16.52(In.)
Pipe flow velocity =      5.54(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =     9.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       35.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.720(Ac.)
Runoff from this stream =     15.576(CFS)
Time of concentration =    9.65 min.
Rainfall intensity =     2.291(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       15.576      9.65                 2.291
Largest stream flow has longer time of concentration
Qp =     15.576 + sum of
Qp =     15.576

Total of 1 streams to confluence:
Flow rates before confluence point:
      15.576
Area of streams before confluence:
        7.720
Results of confluence:
Total flow rate =     15.576(CFS)
Time of concentration =     9.653 min.
Effective stream area after confluence =      7.720(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.100 to Point/Station       37.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =  1483.700(Ft.)
Bottom (of initial area) elevation =  1477.900(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.02348  s(percent)=       2.35
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.098 min.
Rainfall intensity =      2.697(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.839
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
```

```
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.950(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       35.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      0.950(CFS)
Time of concentration =    7.10 min.
Rainfall intensity =     2.697(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       15.576      9.65                 2.291
2        0.950      7.10                 2.697
Largest stream flow has longer time of concentration
Qp =     15.576 + sum of
         Qb         Ia/Ib
          0.950 *    0.850 =      0.807
Qp =     16.383

Total of 2 streams to confluence:
Flow rates before confluence point:
      15.576       0.950
Area of streams before confluence:
        7.720        0.420
Results of confluence:
Total flow rate =     16.383(CFS)
Time of concentration =     9.653 min.
Effective stream area after confluence =      8.140(Ac.)


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Process from Point/Station       37.000 to Point/Station       39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.900(Ft.)
Downstream point/station elevation =  1477.600(Ft.)
Pipe length  =    73.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.383(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    16.383(CFS)
Normal flow depth in pipe =   18.73(In.)
Flow top width inside pipe =   24.89(In.)
Critical Depth =   16.94(In.)
Pipe flow velocity =      5.56(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     9.87 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       39.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
```

```
Stream flow area =      8.140(Ac.)
Runoff from this stream =     16.383(CFS)
Time of concentration =    9.87 min.
Rainfall intensity =     2.264(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.383      9.87                 2.264
Largest stream flow has longer time of concentration
Qp =     16.383 + sum of
Qp =     16.383

Total of 1 streams to confluence:
Flow rates before confluence point:
      16.383
Area of streams before confluence:
        8.140
Results of confluence:
Total flow rate =     16.383(CFS)
Time of concentration =     9.872 min.
Effective stream area after confluence =      8.140(Ac.)


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Process from Point/Station       39.200 to Point/Station       39.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   251.000(Ft.)
Top (of initial area) elevation =  1482.600(Ft.)
Bottom (of initial area) elevation =  1477.900(Ft.)
Difference in elevation =     4.700(Ft.)
Slope =    0.01873  s(percent)=       1.87
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.475 min.
Rainfall intensity =      2.624(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.838
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.637(CFS)
Total initial stream area =        0.290(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       39.100 to Point/Station       39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.900(Ft.)
Downstream point/station elevation =  1477.600(Ft.)
Pipe length  =    14.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.637(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.637(CFS)
Normal flow depth in pipe =    3.99(In.)
Flow top width inside pipe =    5.66(In.)
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Critical Depth =    4.86(In.)
Pipe flow velocity =      4.59(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.53 min.


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Process from Point/Station       37.000 to Point/Station       39.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.290(Ac.)
Runoff from this stream =      0.637(CFS)
Time of concentration =    7.53 min.
Rainfall intensity =     2.614(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.383      9.87                 2.264
2        0.637      7.53                 2.614
Largest stream flow has longer time of concentration
Qp =     16.383 + sum of
         Qb         Ia/Ib
          0.637 *    0.866 =      0.552
Qp =     16.935

Total of 2 streams to confluence:
Flow rates before confluence point:
      16.383       0.637
Area of streams before confluence:
        8.140        0.290
Results of confluence:
Total flow rate =     16.935(CFS)
Time of concentration =     9.872 min.
Effective stream area after confluence =      8.430(Ac.)


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Process from Point/Station       39.300 to Point/Station       39.310
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   333.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1480.800(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.01051  s(percent)=       1.05
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.394 min.
Rainfall intensity =      2.324(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.831
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.792(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.350
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Process from Point/Station       39.100 to Point/Station       39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.900(Ft.)
Downstream point/station elevation =  1477.600(Ft.)
Pipe length  =    14.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.792(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.792(CFS)
Normal flow depth in pipe =    4.77(In.)
Flow top width inside pipe =    4.85(In.)
Critical Depth =    5.31(In.)
Pipe flow velocity =      4.73(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.44 min.


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Process from Point/Station       37.000 to Point/Station       39.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.410(Ac.)
Runoff from this stream =      0.792(CFS)
Time of concentration =    9.44 min.
Rainfall intensity =     2.318(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.383      9.87                 2.264
2        0.637      7.53                 2.614
3        0.792      9.44                 2.318
Largest stream flow has longer time of concentration
Qp =     16.383 + sum of
         Qb         Ia/Ib
          0.637 *    0.866 =      0.552
         Qb         Ia/Ib
          0.792 *    0.977 =      0.774
Qp =     17.709

Total of 3 streams to confluence:
Flow rates before confluence point:
      16.383       0.637       0.792
Area of streams before confluence:
        8.140        0.290        0.410
Results of confluence:
Total flow rate =     17.709(CFS)
Time of concentration =     9.872 min.
Effective stream area after confluence =      8.840(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.000 to Point/Station       41.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.600(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
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Pipe length  =    26.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.709(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    17.709(CFS)
Normal flow depth in pipe =   17.77(In.)
Flow top width inside pipe =   21.05(In.)
Critical Depth =   18.21(In.)
Pipe flow velocity =      7.10(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     9.93 min.


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Process from Point/Station       39.400 to Point/Station       39.410
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   352.000(Ft.)
Top (of initial area) elevation =  1485.100(Ft.)
Bottom (of initial area) elevation =  1480.700(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.01250  s(percent)=       1.25
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.278 min.
Rainfall intensity =      2.340(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.681(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       39.200 to Point/Station       41.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.800(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.681(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.681(CFS)
Normal flow depth in pipe =    3.83(In.)
Flow top width inside pipe =    5.77(In.)
Critical Depth =    5.00(In.)
Pipe flow velocity =      5.15(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.33 min.


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Process from Point/Station       39.000 to Point/Station       41.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.350(Ac.)
Runoff from this stream =      0.681(CFS)
Time of concentration =    9.33 min.
```

```
Rainfall intensity =     2.334(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.383      9.87                 2.264
2        0.681      9.33                 2.334
Largest stream flow has longer time of concentration
Qp =     16.383 + sum of
         Qb         Ia/Ib
          0.681 *    0.970 =      0.661
Qp =     17.044

Total of 2 streams to confluence:
Flow rates before confluence point:
      16.383       0.681
Area of streams before confluence:
        8.140        0.350
Results of confluence:
Total flow rate =     17.044(CFS)
Time of concentration =     9.872 min.
Effective stream area after confluence =      8.490(Ac.)


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Process from Point/Station       41.000 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
Pipe length  =    45.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.044(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.044(CFS)
Normal flow depth in pipe =   18.75(In.)
Flow top width inside pipe =   24.87(In.)
Critical Depth =   17.30(In.)
Pipe flow velocity =      5.78(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =    10.00 min.
End of computations, total study area =           10.76 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.350
Area averaged RI index number =  67.3
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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/21/18  File:27259RATA10.out
------------------------------------------------------------------------
 PM #13523
MILL CREEK PROMENADE
AREA A Q10 (ONSITE)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       39.000 to Point/Station       39.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________
Rainfall intensity =      2.249(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
User specified values are as follows:
TC =  10.00 min.  Rain intensity =       2.25(In/Hr)
Total area =        10.76(Ac.)  Total runoff =     17.00(CFS)


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Process from Point/Station       39.000 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

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____________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
Pipe length  =    45.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.000(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.000(CFS)
Normal flow depth in pipe =   18.73(In.)
Flow top width inside pipe =   24.89(In.)
Critical Depth =   17.28(In.)
Pipe flow velocity =      5.78(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =    10.13 min.


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Process from Point/Station       39.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     10.760(Ac.)
Runoff from this stream =     17.000(CFS)
Time of concentration =   10.13 min.
Rainfall intensity =     2.233(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       17.000     10.13                 2.233
Largest stream flow has longer time of concentration
Qp =     17.000 + sum of
Qp =     17.000

Total of 1 streams to confluence:
Flow rates before confluence point:
      17.000
Area of streams before confluence:
       10.760
Results of confluence:
Total flow rate =     17.000(CFS)
Time of concentration =    10.131 min.
Effective stream area after confluence =     10.760(Ac.)


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Process from Point/Station       36.000 to Point/Station       38.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
____________________________________________________________________
Rainfall intensity =      2.406(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.833
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
User specified values are as follows:
TC =   8.80 min.  Rain intensity =       2.41(In/Hr)
Total area =         9.04(Ac.)  Total runoff =     17.30(CFS)
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Process from Point/Station       39.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      9.040(Ac.)
Runoff from this stream =     17.300(CFS)
Time of concentration =    8.80 min.
Rainfall intensity =     2.406(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       17.000     10.13                 2.233
2       17.300      8.80                 2.406
Largest stream flow has longer or shorter time of concentration
Qp =     17.300 + sum of
         Qa          Tb/Ta
         17.000 *    0.869 =     14.767
Qp =     32.067

Total of 2 streams to confluence:
Flow rates before confluence point:
      17.000      17.300
Area of streams before confluence:
       10.760        9.040
Results of confluence:
Total flow rate =     32.067(CFS)
Time of concentration =     8.800 min.
Effective stream area after confluence =     19.800(Ac.)


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Process from Point/Station       38.000 to Point/Station       40.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.200(Ft.)
Downstream point/station elevation =  1477.000(Ft.)
Pipe length  =    31.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    32.067(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    32.067(CFS)
Normal flow depth in pipe =   24.23(In.)
Flow top width inside pipe =   23.64(In.)
Critical Depth =   23.13(In.)
Pipe flow velocity =      7.54(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     8.87 min.


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Process from Point/Station       40.000 to Point/Station       42.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1477.000(Ft.)
Downstream point elevation =  1475.500(Ft.)
Channel length thru subarea  =   149.000(Ft.)
Channel base width  =   48.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
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Estimated mean flow rate at midpoint of channel =     32.792(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    4.000(Ft.)
Flow(q) thru subarea =     32.792(CFS)
Depth of flow =   0.200(Ft.), Average velocity =   3.360(Ft/s)
Channel flow top width =   49.600(Ft.)
Flow Velocity =    3.36(Ft/s)
Travel time  =    0.74 min.
Time of concentration =    9.61 min.

Sub-Channel No. 1 Critical depth =      0.242(Ft.)
  '     '       '     Critical flow top width =     49.938(Ft.)
  '     '       '     Critical flow velocity=    2.765(Ft/s)
  '     '       '     Critical flow area =     11.860(Sq.Ft)

 Adding area flow to channel
CONDOMINIUM subarea type
Runoff Coefficient = 0.831
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.350; Impervious fraction =  0.650
Rainfall intensity =      2.297(In/Hr) for a    10.0 year storm
Subarea runoff =      1.507(CFS) for      0.790(Ac.)
Total runoff =     33.574(CFS)   Total area =      20.590(Ac.)
Depth of flow =   0.203(Ft.), Average velocity =   3.391(Ft/s)

Sub-Channel No. 1 Critical depth =      0.246(Ft.)
  '     '       '     Critical flow top width =     49.969(Ft.)
  '     '       '     Critical flow velocity=    2.785(Ft/s)
  '     '       '     Critical flow area =     12.055(Sq.Ft)

End of computations, total study area =           20.59 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.350
Area averaged RI index number =  67.3
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               Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 12/11/17  File:27259RAT1048.out
----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
 AREA A EASTERN SIDE - RAT  - Q100 (ONSITE)

Program License Serial Number 4066

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       12.100 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   241.000(Ft.)
Top (of initial area) elevation =  1496.700(Ft.)
Bottom (of initial area) elevation =  1482.800(Ft.)
Difference in elevation =    13.900(Ft.)
Slope =    0.05768  s(percent)=       5.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.872 min.
Rainfall intensity =      4.455(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.651(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       12.000 to Point/Station       14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1482.800(Ft.)
Downstream point/station elevation =  1482.400(Ft.)
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Pipe length  =    73.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.651(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.651(CFS)
Normal flow depth in pipe =    6.90(In.)
Flow top width inside pipe =   11.87(In.)
Critical Depth =    6.55(In.)
Pipe flow velocity =      3.54(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =     6.22 min.


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Process from Point/Station       12.000 to Point/Station       14.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.651(CFS)
Time of concentration =    6.22 min.
Rainfall intensity =     4.322(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.651      6.22                 4.322
Largest stream flow has longer time of concentration
Qp =      1.651 + sum of
Qp =      1.651

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.651
Area of streams before confluence:
        0.420
Results of confluence:
Total flow rate =      1.651(CFS)
Time of concentration =     6.219 min.
Effective stream area after confluence =      0.420(Ac.)


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Process from Point/Station       14.100 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   249.000(Ft.)
Top (of initial area) elevation =  1496.000(Ft.)
Bottom (of initial area) elevation =  1482.400(Ft.)
Difference in elevation =    13.600(Ft.)
Slope =    0.05462  s(percent)=       5.46
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.251 min.
Rainfall intensity =      4.728(In/Hr) for a   100.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      2.189(CFS)
Total initial stream area =        0.520(Ac.)
Pervious area fraction = 0.200


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Process from Point/Station       14.100 to Point/Station       14.000
**** CONFLUENCE OF MINOR STREAMS ****
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____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.520(Ac.)
Runoff from this stream =      2.189(CFS)
Time of concentration =    5.25 min.
Rainfall intensity =     4.728(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.651      6.22                 4.322
2        2.189      5.25                 4.728
Largest stream flow has longer or shorter time of concentration
Qp =      2.189 + sum of
          Qa          Tb/Ta
           1.651 *    0.844 =      1.394
Qp =      3.583

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.651       2.189
Area of streams before confluence:
        0.420        0.520
Results of confluence:
Total flow rate =      3.583(CFS)
Time of concentration =     5.251 min.
Effective stream area after confluence =      0.940(Ac.)


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Process from Point/Station       14.000 to Point/Station       16.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1482.400(Ft.)
Downstream point/station elevation =  1482.100(Ft.)
Pipe length  =    65.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.583(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.583(CFS)
Normal flow depth in pipe =   10.31(In.)
Flow top width inside pipe =   13.91(In.)
Critical Depth =    9.18(In.)
Pipe flow velocity =      3.98(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =     5.52 min.


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Process from Point/Station       14.000 to Point/Station       16.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.940(Ac.)
Runoff from this stream =      3.583(CFS)
Time of concentration =    5.52 min.
Rainfall intensity =     4.602(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.583      5.52                 4.602
Largest stream flow has longer time of concentration
Qp =      3.583 + sum of
Qp =      3.583

Total of 1 streams to confluence:
Flow rates before confluence point:
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       3.583
Area of streams before confluence:
        0.940
Results of confluence:
Total flow rate =      3.583(CFS)
Time of concentration =     5.524 min.
Effective stream area after confluence =      0.940(Ac.)


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Process from Point/Station       16.100 to Point/Station       16.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   241.000(Ft.)
Top (of initial area) elevation =  1495.300(Ft.)
Bottom (of initial area) elevation =  1482.100(Ft.)
Difference in elevation =    13.200(Ft.)
Slope =    0.05477  s(percent)=       5.48
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.933 min.
Rainfall intensity =      4.431(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.642(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       16.100 to Point/Station       16.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.642(CFS)
Time of concentration =    5.93 min.
Rainfall intensity =     4.431(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.583      5.52                 4.602
2        1.642      5.93                 4.431
Largest stream flow has longer or shorter time of concentration
Qp =      3.583 + sum of
          Qa          Tb/Ta
           1.642 *    0.931 =      1.528
Qp =      5.111

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.583       1.642
Area of streams before confluence:
        0.940        0.420
Results of confluence:
Total flow rate =      5.111(CFS)
Time of concentration =     5.524 min.
Effective stream area after confluence =      1.360(Ac.)


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Process from Point/Station       16.000 to Point/Station       18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
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____________________________________________________________________
Upstream point/station elevation =  1482.100(Ft.)
Downstream point/station elevation =  1481.400(Ft.)
Pipe length  =   132.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.111(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.111(CFS)
Normal flow depth in pipe =   10.78(In.)
Flow top width inside pipe =   17.64(In.)
Critical Depth =   10.45(In.)
Pipe flow velocity =      4.62(Ft/s)
Travel time through pipe =    0.48 min.
Time of concentration (TC) =     6.00 min.


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Process from Point/Station       16.000 to Point/Station       18.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.360(Ac.)
Runoff from this stream =      5.111(CFS)
Time of concentration =    6.00 min.
Rainfall intensity =     4.404(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.111      6.00                 4.404
Largest stream flow has longer time of concentration
Qp =      5.111 + sum of
Qp =      5.111

Total of 1 streams to confluence:
Flow rates before confluence point:
       5.111
Area of streams before confluence:
        1.360
Results of confluence:
Total flow rate =      5.111(CFS)
Time of concentration =     6.003 min.
Effective stream area after confluence =      1.360(Ac.)


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Process from Point/Station       18.200 to Point/Station       18.210
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   326.000(Ft.)
Top (of initial area) elevation =  1496.000(Ft.)
Bottom (of initial area) elevation =  1491.900(Ft.)
Difference in elevation =     4.100(Ft.)
Slope =    0.01258  s(percent)=       1.26
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.986 min.
Rainfall intensity =      3.556(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.468(CFS)
Total initial stream area =        0.470(Ac.)
Pervious area fraction = 0.350
```

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Process from Point/Station       18.100 to Point/Station       18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.600(Ft.)
Downstream point/station elevation =  1481.400(Ft.)
Pipe length  =    23.10(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.468(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.468(CFS)
Normal flow depth in pipe =    7.03(In.)
Flow top width inside pipe =    7.44(In.)
Critical Depth =    6.70(In.)
Pipe flow velocity =      3.97(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.08 min.


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Process from Point/Station       16.000 to Point/Station       18.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.470(Ac.)
Runoff from this stream =      1.468(CFS)
Time of concentration =    9.08 min.
Rainfall intensity =     3.536(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.111      6.00                 4.404
2        1.468      9.08                 3.536
Largest stream flow has longer or shorter time of concentration
Qp =      5.111 + sum of
         Qa          Tb/Ta
          1.468 *    0.661 =      0.970
Qp =      6.081

Total of 2 streams to confluence:
Flow rates before confluence point:
       5.111       1.468
Area of streams before confluence:
        1.360        0.470
Results of confluence:
Total flow rate =      6.081(CFS)
Time of concentration =     6.003 min.
Effective stream area after confluence =      1.830(Ac.)


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Process from Point/Station       18.400 to Point/Station       18.410
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   397.000(Ft.)
Top (of initial area) elevation =  1496.700(Ft.)
Bottom (of initial area) elevation =  1491.900(Ft.)
Difference in elevation =     4.800(Ft.)
Slope =    0.01209  s(percent)=       1.21
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.800 min.
Rainfall intensity =      3.396(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
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Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.043(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       18.300 to Point/Station       18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.700(Ft.)
Downstream point/station elevation =  1481.400(Ft.)
Pipe length  =    24.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.043(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.043(CFS)
Normal flow depth in pipe =    4.88(In.)
Flow top width inside pipe =    8.97(In.)
Critical Depth =    5.62(In.)
Pipe flow velocity =      4.26(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       18.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.350(Ac.)
Runoff from this stream =      1.043(CFS)
Time of concentration =    9.90 min.
Rainfall intensity =     3.379(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.111      6.00                 4.404
2        1.468      9.08                 3.536
3        1.043      9.90                 3.379
Largest stream flow has longer or shorter time of concentration
Qp =      5.111 + sum of
          Qa          Tb/Ta
           1.468 *    0.661 =      0.970
          Qa          Tb/Ta
           1.043 *    0.607 =      0.632
Qp =      6.713

Total of 3 streams to confluence:
Flow rates before confluence point:
       5.111       1.468       1.043
Area of streams before confluence:
        1.360        0.470        0.350
Results of confluence:
Total flow rate =      6.713(CFS)
Time of concentration =     6.003 min.
Effective stream area after confluence =      2.180(Ac.)


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Process from Point/Station       18.000 to Point/Station       20.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.400(Ft.)
Downstream point/station elevation =  1481.300(Ft.)
Pipe length  =    18.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.713(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     6.713(CFS)
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Normal flow depth in pipe =   13.05(In.)
Flow top width inside pipe =   16.07(In.)
Critical Depth =   12.02(In.)
Pipe flow velocity =      4.89(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     6.07 min.


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Process from Point/Station       18.000 to Point/Station       20.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.180(Ac.)
Runoff from this stream =      6.713(CFS)
Time of concentration =    6.07 min.
Rainfall intensity =     4.379(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1        6.713      6.07                 4.379
Largest stream flow has longer time of concentration
Qp =      6.713 + sum of
Qp =      6.713

Total of 1 streams to confluence:
Flow rates before confluence point:
       6.713
Area of streams before confluence:
        2.180
Results of confluence:
Total flow rate =      6.713(CFS)
Time of concentration =     6.067 min.
Effective stream area after confluence =      2.180(Ac.)


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Process from Point/Station       20.100 to Point/Station       20.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =  1493.000(Ft.)
Bottom (of initial area) elevation =  1481.300(Ft.)
Difference in elevation =    11.700(Ft.)
Slope =    0.05021  s(percent)=       5.02
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.956 min.
Rainfall intensity =      4.422(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.521(CFS)
Total initial stream area =        0.390(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       18.000 to Point/Station       20.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.390(Ac.)
Runoff from this stream =      1.521(CFS)
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Time of concentration =    5.96 min.
Rainfall intensity =     4.422(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        6.713      6.07                 4.379
2        1.521      5.96                 4.422
Largest stream flow has longer time of concentration
Qp =      6.713 + sum of
         Qb         Ia/Ib
          1.521 *    0.990 =      1.507
Qp =      8.220

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.713       1.521
Area of streams before confluence:
        2.180        0.390
Results of confluence:
Total flow rate =      8.220(CFS)
Time of concentration =     6.067 min.
Effective stream area after confluence =      2.570(Ac.)


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Process from Point/Station       20.000 to Point/Station       22.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.300(Ft.)
Downstream point/station elevation =  1480.600(Ft.)
Pipe length  =   144.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.220(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.220(CFS)
Normal flow depth in pipe =   13.52(In.)
Flow top width inside pipe =   20.11(In.)
Critical Depth =   12.76(In.)
Pipe flow velocity =      5.02(Ft/s)
Travel time through pipe =    0.48 min.
Time of concentration (TC) =     6.55 min.


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Process from Point/Station       20.000 to Point/Station       22.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.570(Ac.)
Runoff from this stream =      8.220(CFS)
Time of concentration =    6.55 min.
Rainfall intensity =     4.206(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.220      6.55                 4.206
Largest stream flow has longer time of concentration
Qp =      8.220 + sum of
Qp =      8.220

Total of 1 streams to confluence:
Flow rates before confluence point:
       8.220
Area of streams before confluence:
        2.570
Results of confluence:
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```
Total flow rate =      8.220(CFS)
Time of concentration =     6.547 min.
Effective stream area after confluence =      2.570(Ac.)


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Process from Point/Station       22.200 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   240.000(Ft.)
Top (of initial area) elevation =  1491.000(Ft.)
Bottom (of initial area) elevation =  1480.600(Ft.)
Difference in elevation =    10.400(Ft.)
Slope =    0.04333  s(percent)=       4.33
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.208 min.
Rainfall intensity =      4.326(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.602(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       20.000 to Point/Station       22.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.602(CFS)
Time of concentration =    6.21 min.
Rainfall intensity =     4.326(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.220      6.55                 4.206
2        1.602      6.21                 4.326
Largest stream flow has longer time of concentration
Qp =      8.220 + sum of
         Qb         Ia/Ib
          1.602 *    0.972 =      1.558
Qp =      9.778

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.220       1.602
Area of streams before confluence:
        2.570        0.420
Results of confluence:
Total flow rate =      9.778(CFS)
Time of concentration =     6.547 min.
Effective stream area after confluence =      2.990(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.100 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =  1491.200(Ft.)
Bottom (of initial area) elevation =  1480.600(Ft.)
```

```
Difference in elevation =    10.600(Ft.)
Slope =    0.04240  s(percent)=       4.24
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.337 min.
Rainfall intensity =      4.279(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.735(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       20.000 to Point/Station       22.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.460(Ac.)
Runoff from this stream =      1.735(CFS)
Time of concentration =    6.34 min.
Rainfall intensity =     4.279(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.220      6.55                 4.206
2        1.602      6.21                 4.326
3        1.735      6.34                 4.279
Largest stream flow has longer time of concentration
Qp =      8.220 + sum of
          Qb         Ia/Ib
           1.602 *    0.972 =      1.558
          Qb         Ia/Ib
           1.735 *    0.983 =      1.706
Qp =     11.483

Total of 3 streams to confluence:
Flow rates before confluence point:
       8.220       1.602       1.735
Area of streams before confluence:
        2.570        0.420        0.460
Results of confluence:
Total flow rate =     11.483(CFS)
Time of concentration =     6.547 min.
Effective stream area after confluence =      3.450(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       24.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.600(Ft.)
Downstream point/station elevation =  1480.000(Ft.)
Pipe length  =   138.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.483(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.483(CFS)
Normal flow depth in pipe =   15.82(In.)
Flow top width inside pipe =   22.75(In.)
Critical Depth =   14.61(In.)
Pipe flow velocity =      5.23(Ft/s)
Travel time through pipe =    0.44 min.
Time of concentration (TC) =     6.99 min.
```

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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.450(Ac.)
Runoff from this stream =     11.483(CFS)
Time of concentration =    6.99 min.
Rainfall intensity =     4.063(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.483      6.99                 4.063
Largest stream flow has longer time of concentration
Qp =     11.483 + sum of
Qp =     11.483

Total of 1 streams to confluence:
Flow rates before confluence point:
      11.483
Area of streams before confluence:
        3.450
Results of confluence:
Total flow rate =     11.483(CFS)
Time of concentration =     6.989 min.
Effective stream area after confluence =      3.450(Ac.)


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Process from Point/Station       24.200 to Point/Station       24.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   189.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.04233  s(percent)=       4.23
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.668 min.
Rainfall intensity =      4.540(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.481(CFS)
Total initial stream area =        0.120(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.120(Ac.)
Runoff from this stream =      0.481(CFS)
Time of concentration =    5.67 min.
Rainfall intensity =     4.540(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       11.483      6.99                 4.063
2        0.481      5.67                 4.540
Largest stream flow has longer time of concentration
Qp =     11.483 + sum of
          Qb         Ia/Ib
           0.481 *    0.895 =      0.430
Qp =     11.913

Total of 2 streams to confluence:
Flow rates before confluence point:
      11.483       0.481
Area of streams before confluence:
        3.450        0.120
Results of confluence:
Total flow rate =     11.913(CFS)
Time of concentration =     6.989 min.
Effective stream area after confluence =      3.570(Ac.)


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Process from Point/Station       24.100 to Point/Station       24.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   252.000(Ft.)
Top (of initial area) elevation =  1488.300(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.300(Ft.)
Slope =    0.03294  s(percent)=       3.29
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.687 min.
Rainfall intensity =      4.159(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.209(CFS)
Total initial stream area =        0.330(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.330(Ac.)
Runoff from this stream =      1.209(CFS)
Time of concentration =    6.69 min.
Rainfall intensity =     4.159(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.483      6.99                 4.063
2        0.481      5.67                 4.540
3        1.209      6.69                 4.159
Largest stream flow has longer time of concentration
Qp =     11.483 + sum of
          Qb         Ia/Ib
           0.481 *    0.895 =      0.430
          Qb         Ia/Ib
           1.209 *    0.977 =      1.181
Qp =     13.095
```

```
Total of 3 streams to confluence:
Flow rates before confluence point:
      11.483       0.481       1.209
Area of streams before confluence:
        3.450        0.120        0.330
Results of confluence:
Total flow rate =     13.095(CFS)
Time of concentration =     6.989 min.
Effective stream area after confluence =      3.900(Ac.)


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Process from Point/Station       24.400 to Point/Station       24.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   240.000(Ft.)
Top (of initial area) elevation =  1488.700(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     8.700(Ft.)
Slope =    0.03625  s(percent)=       3.63
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.433 min.
Rainfall intensity =      4.245(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.572(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       22.000 to Point/Station       24.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.572(CFS)
Time of concentration =    6.43 min.
Rainfall intensity =     4.245(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.483      6.99                 4.063
2        0.481      5.67                 4.540
3        1.209      6.69                 4.159
4        1.572      6.43                 4.245
Largest stream flow has longer time of concentration
Qp =     11.483 + sum of
          Qb         Ia/Ib
           0.481 *    0.895 =      0.430
          Qb         Ia/Ib
           1.209 *    0.977 =      1.181
          Qb         Ia/Ib
           1.572 *    0.957 =      1.504
Qp =     14.599

Total of 4 streams to confluence:
Flow rates before confluence point:
      11.483       0.481       1.209       1.572
Area of streams before confluence:
        3.450        0.120        0.330        0.420
```

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Results of confluence:
Total flow rate =     14.599(CFS)
Time of concentration =     6.989 min.
Effective stream area after confluence =      4.320(Ac.)


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Process from Point/Station       24.000 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.000(Ft.)
Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =   100.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.599(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    14.599(CFS)
Normal flow depth in pipe =   18.05(In.)
Flow top width inside pipe =   20.73(In.)
Critical Depth =   16.52(In.)
Pipe flow velocity =      5.76(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     7.28 min.


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Process from Point/Station       24.000 to Point/Station       26.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      4.320(Ac.)
Runoff from this stream =     14.599(CFS)
Time of concentration =    7.28 min.
Rainfall intensity =     3.976(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.599      7.28               3.976
Largest stream flow has longer time of concentration
Qp =     14.599 + sum of
Qp =     14.599

Total of 1 main streams to confluence:
Flow rates before confluence point:
      14.599
Area of streams before confluence:
        4.320


Results of confluence:
Total flow rate =     14.599(CFS)
Time of concentration =     7.280 min.
Effective stream area after confluence  =      4.320(Ac.)


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Process from Point/Station       26.700 to Point/Station       26.600
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   143.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1480.900(Ft.)
Difference in elevation =     7.100(Ft.)
Slope =    0.04965  s(percent)=       4.97
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
```

```
Rainfall intensity =      4.852(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.472(CFS)
Total initial stream area =        0.110(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.700 to Point/Station       26.600
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.110(Ac.)
Runoff from this stream =      0.472(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     4.852(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.472      5.00                 4.852
Largest stream flow has longer time of concentration
Qp =      0.472 + sum of
Qp =      0.472

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.472
Area of streams before confluence:
        0.110
Results of confluence:
Total flow rate =      0.472(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence =      0.110(Ac.)


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Process from Point/Station       26.800 to Point/Station       26.600
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   213.000(Ft.)
Top (of initial area) elevation =  1488.200(Ft.)
Bottom (of initial area) elevation =  1480.900(Ft.)
Difference in elevation =     7.300(Ft.)
Slope =    0.03427  s(percent)=       3.43
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.202 min.
Rainfall intensity =      4.328(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.603(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.800 to Point/Station       26.600
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.603(CFS)
Time of concentration =    6.20 min.
Rainfall intensity =     4.328(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.472      5.00                 4.852
2        1.603      6.20                 4.328
Largest stream flow has longer time of concentration
Qp =      1.603 + sum of
         Qb         Ia/Ib
          0.472 *    0.892 =      0.421
Qp =      2.024

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.472       1.603
Area of streams before confluence:
        0.110        0.420
Results of confluence:
Total flow rate =      2.024(CFS)
Time of concentration =     6.202 min.
Effective stream area after confluence =      0.530(Ac.)


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Process from Point/Station       26.600 to Point/Station       26.300
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1480.900(Ft.)
Downstream point/station elevation =  1479.700(Ft.)
Pipe length  =   114.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.024(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.024(CFS)
Normal flow depth in pipe =    6.39(In.)
Flow top width inside pipe =   11.98(In.)
Critical Depth =    7.28(In.)
Pipe flow velocity =      4.76(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =     6.60 min.


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Process from Point/Station       26.600 to Point/Station       26.300
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.530(Ac.)
Runoff from this stream =      2.024(CFS)
Time of concentration =    6.60 min.
Rainfall intensity =     4.186(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.024      6.60                 4.186
Largest stream flow has longer time of concentration
Qp =      2.024 + sum of
Qp =      2.024
```

```
Total of 1 streams to confluence:
Flow rates before confluence point:
       2.024
Area of streams before confluence:
        0.530
Results of confluence:
Total flow rate =      2.024(CFS)
Time of concentration =     6.605 min.
Effective stream area after confluence =      0.530(Ac.)


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Process from Point/Station       26.500 to Point/Station       26.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =    75.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1479.700(Ft.)
Difference in elevation =     8.300(Ft.)
Slope =    0.11067  s(percent)=      11.07
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      4.852(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.257(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.500 to Point/Station       26.300
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.257(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     4.852(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.024      6.60                 4.186
2        0.257      5.00                 4.852
Largest stream flow has longer time of concentration
Qp =      2.024 + sum of
         Qb         Ia/Ib
          0.257 *    0.863 =      0.222
Qp =      2.245

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.024       0.257
Area of streams before confluence:
        0.530        0.060
Results of confluence:
Total flow rate =      2.245(CFS)
Time of concentration =     6.605 min.
Effective stream area after confluence =      0.590(Ac.)
```

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Process from Point/Station       26.400 to Point/Station       26.410
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   503.000(Ft.)
Top (of initial area) elevation =  1493.000(Ft.)
Bottom (of initial area) elevation =  1485.160(Ft.)
Difference in elevation =     7.840(Ft.)
Slope =    0.01559  s(percent)=       1.56
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.240 min.
Rainfall intensity =      3.318(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.338(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.400 to Point/Station       26.300
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.460(Ac.)
Runoff from this stream =      1.338(CFS)
Time of concentration =   10.24 min.
Rainfall intensity =     3.318(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.024      6.60                 4.186
2        0.257      5.00                 4.852
3        1.338     10.24                 3.318
Largest stream flow has longer or shorter time of concentration
Qp =      2.024 + sum of
          Qb         Ia/Ib
           0.257 *    0.863 =      0.222
          Qa          Tb/Ta
           1.338 *    0.645 =      0.863
Qp =      3.109

Total of 3 streams to confluence:
Flow rates before confluence point:
       2.024       0.257       1.338
Area of streams before confluence:
        0.530        0.060        0.460
Results of confluence:
Total flow rate =      3.109(CFS)
Time of concentration =     6.605 min.
Effective stream area after confluence =      1.050(Ac.)


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Process from Point/Station       26.300 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.700(Ft.)
Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =    25.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.109(CFS)
```

```
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.109(CFS)
Normal flow depth in pipe =    9.63(In.)
Flow top width inside pipe =    9.55(In.)
Critical Depth =    9.07(In.)
Pipe flow velocity =      4.60(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     6.70 min.


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Process from Point/Station       26.300 to Point/Station       26.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.050(Ac.)
Runoff from this stream =      3.109(CFS)
Time of concentration =    6.70 min.
Rainfall intensity =     4.156(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.109      6.70                 4.156
Largest stream flow has longer time of concentration
Qp =      3.109 + sum of
Qp =      3.109

Total of 1 streams to confluence:
Flow rates before confluence point:
       3.109
Area of streams before confluence:
        1.050
Results of confluence:
Total flow rate =      3.109(CFS)
Time of concentration =     6.696 min.
Effective stream area after confluence =      1.050(Ac.)


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Process from Point/Station       26.200 to Point/Station       26.210
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   372.000(Ft.)
Top (of initial area) elevation =  1491.000(Ft.)
Bottom (of initial area) elevation =  1286.900(Ft.)
Difference in elevation =   204.100(Ft.)
Slope =    0.54866  s(percent)=      54.87
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      4.852(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.843(CFS)
Total initial stream area =        0.430(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       26.300 to Point/Station       26.000
**** CONFLUENCE OF MINOR STREAMS ****
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____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.430(Ac.)
Runoff from this stream =      1.843(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     4.852(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.109      6.70                 4.156
2        1.843      5.00                 4.852
Largest stream flow has longer time of concentration
Qp =      3.109 + sum of
          Qb         Ia/Ib
           1.843 *    0.857 =      1.579
Qp =      4.688

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.109       1.843
Area of streams before confluence:
        1.050        0.430
Results of confluence:
Total flow rate =      4.688(CFS)
Time of concentration =     6.696 min.
Effective stream area after confluence =      1.480(Ac.)


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Process from Point/Station       24.000 to Point/Station       26.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.480(Ac.)
Runoff from this stream =      4.688(CFS)
Time of concentration =    6.70 min.
Rainfall intensity =     4.156(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.599      7.28                3.976
2        4.688      6.70                4.156
Largest stream flow has longer time of concentration
Qp =     14.599 + sum of
          Qb         Ia/Ib
           4.688 *    0.957 =      4.485
Qp =     19.083

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.599       4.688
Area of streams before confluence:
        4.320        1.480


Results of confluence:
Total flow rate =     19.083(CFS)
Time of concentration =     7.280 min.
Effective stream area after confluence  =      5.800(Ac.)


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Process from Point/Station       26.000 to Point/Station       28.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

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____________________________________________________________________
Upstream point/station elevation =  1479.500(Ft.)
Downstream point/station elevation =  1479.300(Ft.)
Pipe length  =    39.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.083(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    19.083(CFS)
Normal flow depth in pipe =   19.41(In.)
Flow top width inside pipe =   24.28(In.)
Critical Depth =   18.33(In.)
Pipe flow velocity =      6.24(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     7.39 min.


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Process from Point/Station       26.000 to Point/Station       28.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.800(Ac.)
Runoff from this stream =     19.083(CFS)
Time of concentration =    7.39 min.
Rainfall intensity =     3.946(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1       19.083      7.39                 3.946
Largest stream flow has longer time of concentration
Qp =     19.083 + sum of
Qp =     19.083

Total of 1 streams to confluence:
Flow rates before confluence point:
      19.083
Area of streams before confluence:
        5.800
Results of confluence:
Total flow rate =     19.083(CFS)
Time of concentration =     7.385 min.
Effective stream area after confluence =      5.800(Ac.)


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Process from Point/Station       28.100 to Point/Station       28.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   218.000(Ft.)
Top (of initial area) elevation =  1486.000(Ft.)
Bottom (of initial area) elevation =  1479.300(Ft.)
Difference in elevation =     6.700(Ft.)
Slope =    0.03073  s(percent)=       3.07
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.398 min.
Rainfall intensity =      4.257(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.351(CFS)
Total initial stream area =        0.360(Ac.)
Pervious area fraction = 0.350
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Process from Point/Station       26.000 to Point/Station       28.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.360(Ac.)
Runoff from this stream =      1.351(CFS)
Time of concentration =    6.40 min.
Rainfall intensity =     4.257(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       19.083      7.39                 3.946
2        1.351      6.40                 4.257
Largest stream flow has longer time of concentration
Qp =     19.083 + sum of
          Qb         Ia/Ib
           1.351 *    0.927 =      1.252
Qp =     20.335

Total of 2 streams to confluence:
Flow rates before confluence point:
      19.083       1.351
Area of streams before confluence:
        5.800        0.360
Results of confluence:
Total flow rate =     20.335(CFS)
Time of concentration =     7.385 min.
Effective stream area after confluence =      6.160(Ac.)


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Process from Point/Station       28.000 to Point/Station       30.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.300(Ft.)
Downstream point/station elevation =  1478.800(Ft.)
Pipe length  =    80.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.335(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    20.335(CFS)
Normal flow depth in pipe =   18.84(In.)
Flow top width inside pipe =   24.79(In.)
Critical Depth =   18.94(In.)
Pipe flow velocity =      6.86(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     7.58 min.


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Process from Point/Station       28.000 to Point/Station       30.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.160(Ac.)
Runoff from this stream =     20.335(CFS)
Time of concentration =    7.58 min.
Rainfall intensity =     3.891(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.335      7.58                 3.891
Largest stream flow has longer time of concentration
Qp =     20.335 + sum of
Qp =     20.335
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Total of 1 streams to confluence:
Flow rates before confluence point:
      20.335
Area of streams before confluence:
        6.160
Results of confluence:
Total flow rate =     20.335(CFS)
Time of concentration =     7.581 min.
Effective stream area after confluence =      6.160(Ac.)


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Process from Point/Station       30.100 to Point/Station       30.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   124.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1478.800(Ft.)
Difference in elevation =     5.500(Ft.)
Slope =    0.04435  s(percent)=       4.44
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      4.852(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.257(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       30.100 to Point/Station       30.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.257(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     4.852(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.335      7.58                 3.891
2        0.257      5.00                 4.852
Largest stream flow has longer time of concentration
Qp =     20.335 + sum of
          Qb         Ia/Ib
           0.257 *    0.802 =      0.206
Qp =     20.541

Total of 2 streams to confluence:
Flow rates before confluence point:
      20.335       0.257
Area of streams before confluence:
        6.160        0.060
Results of confluence:
Total flow rate =     20.541(CFS)
Time of concentration =     7.581 min.
Effective stream area after confluence =      6.220(Ac.)
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Process from Point/Station       30.200 to Point/Station       30.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   124.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1478.800(Ft.)
Difference in elevation =     5.500(Ft.)
Slope =    0.04435  s(percent)=       4.44
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      4.852(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.257(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       28.000 to Point/Station       30.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.257(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     4.852(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.335      7.58                 3.891
2        0.257      5.00                 4.852
3        0.257      5.00                 4.852
Largest stream flow has longer time of concentration
Qp =     20.335 + sum of
          Qb         Ia/Ib
           0.257 *    0.802 =      0.206
          Qb         Ia/Ib
           0.257 *    0.802 =      0.206
Qp =     20.748

Total of 3 streams to confluence:
Flow rates before confluence point:
      20.335       0.257       0.257
Area of streams before confluence:
        6.160        0.060        0.060
Results of confluence:
Total flow rate =     20.748(CFS)
Time of concentration =     7.581 min.
Effective stream area after confluence =      6.280(Ac.)


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Process from Point/Station       30.000 to Point/Station       32.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.800(Ft.)
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Downstream point/station elevation =  1478.400(Ft.)
Pipe length  =    91.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.748(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    20.748(CFS)
Normal flow depth in pipe =   22.50(In.)
Flow top width inside pipe =   20.12(In.)
Critical Depth =   19.13(In.)
Pipe flow velocity =      5.85(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     7.84 min.


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Process from Point/Station       30.000 to Point/Station       32.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.280(Ac.)
Runoff from this stream =     20.748(CFS)
Time of concentration =    7.84 min.
Rainfall intensity =     3.822(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.748      7.84                 3.822
Largest stream flow has longer time of concentration
Qp =     20.748 + sum of
Qp =     20.748

Total of 1 streams to confluence:
Flow rates before confluence point:
      20.748
Area of streams before confluence:
        6.280
Results of confluence:
Total flow rate =     20.748(CFS)
Time of concentration =     7.843 min.
Effective stream area after confluence =      6.280(Ac.)


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Process from Point/Station       32.400 to Point/Station       32.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   220.000(Ft.)
Top (of initial area) elevation =  1484.700(Ft.)
Bottom (of initial area) elevation =  1478.600(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.02773  s(percent)=       2.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.555 min.
Rainfall intensity =      4.203(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.259(CFS)
Total initial stream area =        0.340(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.300 to Point/Station       32.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1478.600(Ft.)
Downstream point/station elevation =  1478.400(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.259(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.259(CFS)
Normal flow depth in pipe =    6.18(In.)
Flow top width inside pipe =    8.35(In.)
Critical Depth =    6.20(In.)
Pipe flow velocity =      3.89(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     6.65 min.


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Process from Point/Station       30.000 to Point/Station       32.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.340(Ac.)
Runoff from this stream =      1.259(CFS)
Time of concentration =    6.65 min.
Rainfall intensity =     4.170(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.748      7.84                 3.822
2        1.259      6.65                 4.170
Largest stream flow has longer time of concentration
Qp =     20.748 + sum of
          Qb         Ia/Ib
           1.259 *    0.917 =      1.154
Qp =     21.902

Total of 2 streams to confluence:
Flow rates before confluence point:
      20.748       1.259
Area of streams before confluence:
        6.280        0.340
Results of confluence:
Total flow rate =     21.902(CFS)
Time of concentration =     7.843 min.
Effective stream area after confluence =      6.620(Ac.)


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Process from Point/Station       32.200 to Point/Station       32.100
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
Initial area flow distance =   368.000(Ft.)
Top (of initial area) elevation =  1490.500(Ft.)
Bottom (of initial area) elevation =  1478.800(Ft.)
Difference in elevation =    11.700(Ft.)
Slope =    0.03179  s(percent)=       3.18
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.836 min.
Rainfall intensity =      3.824(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      2.119(CFS)
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Total initial stream area =        0.630(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.100 to Point/Station       32.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.800(Ft.)
Downstream point/station elevation =  1478.400(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.119(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.119(CFS)
Normal flow depth in pipe =    6.81(In.)
Flow top width inside pipe =   11.89(In.)
Critical Depth =    7.46(In.)
Pipe flow velocity =      4.60(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =     7.99 min.


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Process from Point/Station       30.000 to Point/Station       32.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.630(Ac.)
Runoff from this stream =      2.119(CFS)
Time of concentration =    7.99 min.
Rainfall intensity =     3.784(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.748      7.84                 3.822
2        1.259      6.65                 4.170
3        2.119      7.99                 3.784
Largest stream flow has longer or shorter time of concentration
Qp =     20.748 + sum of
          Qb         Ia/Ib
           1.259 *    0.917 =      1.154
          Qa          Tb/Ta
           2.119 *    0.981 =      2.079
Qp =     23.981

Total of 3 streams to confluence:
Flow rates before confluence point:
      20.748       1.259       2.119
Area of streams before confluence:
        6.280        0.340        0.630
Results of confluence:
Total flow rate =     23.981(CFS)
Time of concentration =     7.843 min.
Effective stream area after confluence =      7.250(Ac.)


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Process from Point/Station       32.000 to Point/Station       34.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.400(Ft.)
Downstream point/station elevation =  1477.700(Ft.)
Pipe length  =   129.10(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.981(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    23.981(CFS)
Normal flow depth in pipe =   23.63(In.)
Flow top width inside pipe =   17.86(In.)
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Critical Depth =   20.57(In.)
Pipe flow velocity =      6.50(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     8.17 min.


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.250(Ac.)
Runoff from this stream =     23.981(CFS)
Time of concentration =    8.17 min.
Rainfall intensity =     3.739(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.981      8.17                 3.739
Largest stream flow has longer time of concentration
Qp =     23.981 + sum of
Qp =     23.981

Total of 1 streams to confluence:
Flow rates before confluence point:
      23.981
Area of streams before confluence:
        7.250
Results of confluence:
Total flow rate =     23.981(CFS)
Time of concentration =     8.174 min.
Effective stream area after confluence =      7.250(Ac.)


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Process from Point/Station       34.200 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   150.000(Ft.)
Top (of initial area) elevation =  1482.100(Ft.)
Bottom (of initial area) elevation =  1477.700(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.02933  s(percent)=       2.93
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.561 min.
Rainfall intensity =      4.586(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.243(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.243(CFS)
Time of concentration =    5.56 min.
Rainfall intensity =     4.586(In/Hr)
```

```
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.981      8.17                 3.739
2        0.243      5.56                 4.586
Largest stream flow has longer time of concentration
Qp =     23.981 + sum of
          Qb         Ia/Ib
           0.243 *    0.815 =      0.198
Qp =     24.179

Total of 2 streams to confluence:
Flow rates before confluence point:
      23.981       0.243
Area of streams before confluence:
        7.250        0.060
Results of confluence:
Total flow rate =     24.179(CFS)
Time of concentration =     8.174 min.
Effective stream area after confluence =      7.310(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       34.300 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   150.000(Ft.)
Top (of initial area) elevation =  1482.100(Ft.)
Bottom (of initial area) elevation =  1477.700(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.02933  s(percent)=       2.93
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.561 min.
Rainfall intensity =      4.586(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      0.243(CFS)
Total initial stream area =        0.060(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.060(Ac.)
Runoff from this stream =      0.243(CFS)
Time of concentration =    5.56 min.
Rainfall intensity =     4.586(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.981      8.17                 3.739
2        0.243      5.56                 4.586
3        0.243      5.56                 4.586
Largest stream flow has longer time of concentration
Qp =     23.981 + sum of
          Qb         Ia/Ib
```

```
          0.243 *    0.815 =      0.198
         Qb         Ia/Ib
          0.243 *    0.815 =      0.198
Qp =     24.377

Total of 3 streams to confluence:
Flow rates before confluence point:
      23.981       0.243       0.243
Area of streams before confluence:
        7.250        0.060        0.060
Results of confluence:
Total flow rate =     24.377(CFS)
Time of concentration =     8.174 min.
Effective stream area after confluence =      7.370(Ac.)


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Process from Point/Station       34.100 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   226.000(Ft.)
Top (of initial area) elevation =  1483.300(Ft.)
Bottom (of initial area) elevation =  1477.700(Ft.)
Difference in elevation =     5.600(Ft.)
Slope =    0.02478  s(percent)=       2.48
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.777 min.
Rainfall intensity =      4.130(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.237(CFS)
Total initial stream area =        0.340(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       32.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.340(Ac.)
Runoff from this stream =      1.237(CFS)
Time of concentration =    6.78 min.
Rainfall intensity =     4.130(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.981      8.17                 3.739
2        0.243      5.56                 4.586
3        0.243      5.56                 4.586
4        1.237      6.78                 4.130
Largest stream flow has longer time of concentration
Qp =     23.981 + sum of
         Qb         Ia/Ib
          0.243 *    0.815 =      0.198
         Qb         Ia/Ib
          0.243 *    0.815 =      0.198
         Qb         Ia/Ib
          1.237 *    0.905 =      1.120
Qp =     25.497

Total of 4 streams to confluence:
```

```
Flow rates before confluence point:
      23.981       0.243       0.243       1.237
Area of streams before confluence:
        7.250        0.060        0.060        0.340
Results of confluence:
Total flow rate =     25.497(CFS)
Time of concentration =     8.174 min.
Effective stream area after confluence =      7.710(Ac.)


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Process from Point/Station       34.000 to Point/Station       36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.700(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    74.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.497(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    25.497(CFS)
Normal flow depth in pipe =   24.05(In.)
Flow top width inside pipe =   23.93(In.)
Critical Depth =   20.65(In.)
Pipe flow velocity =      6.04(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =     8.38 min.


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Process from Point/Station       34.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.710(Ac.)
Runoff from this stream =     25.497(CFS)
Time of concentration =    8.38 min.
Rainfall intensity =     3.690(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.497      8.38                 3.690
Largest stream flow has longer time of concentration
Qp =     25.497 + sum of
Qp =     25.497

Total of 1 streams to confluence:
Flow rates before confluence point:
      25.497
Area of streams before confluence:
        7.710
Results of confluence:
Total flow rate =     25.497(CFS)
Time of concentration =     8.380 min.
Effective stream area after confluence =      7.710(Ac.)


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Process from Point/Station       36.200 to Point/Station       36.210
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   680.000(Ft.)
Top (of initial area) elevation =  1488.400(Ft.)
Bottom (of initial area) elevation =  1480.700(Ft.)
Difference in elevation =     7.700(Ft.)
Slope =    0.01132  s(percent)=       1.13
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.314 min.
Rainfall intensity =      3.009(In/Hr) for a   100.0 year storm
```

```
CONDOMINIUM subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.000(CFS)
Total initial stream area =        0.380(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       36.100 to Point/Station       36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.500(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    14.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.000(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.000(CFS)
Normal flow depth in pipe =    5.63(In.)
Flow top width inside pipe =    8.71(In.)
Critical Depth =    5.51(In.)
Pipe flow velocity =      3.44(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    12.38 min.


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Process from Point/Station       34.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.380(Ac.)
Runoff from this stream =      1.000(CFS)
Time of concentration =   12.38 min.
Rainfall intensity =     3.000(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.497      8.38                 3.690
2        1.000     12.38                 3.000
Largest stream flow has longer or shorter time of concentration
Qp =     25.497 + sum of
          Qa          Tb/Ta
           1.000 *    0.677 =      0.677
Qp =     26.174

Total of 2 streams to confluence:
Flow rates before confluence point:
      25.497       1.000
Area of streams before confluence:
        7.710        0.380
Results of confluence:
Total flow rate =     26.174(CFS)
Time of concentration =     8.380 min.
Effective stream area after confluence =      8.090(Ac.)


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Process from Point/Station       36.000 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
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```
Pipe length  =    41.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.174(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    26.174(CFS)
Normal flow depth in pipe =   22.59(In.)
Flow top width inside pipe =   25.87(In.)
Critical Depth =   20.93(In.)
Pipe flow velocity =      6.59(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     8.48 min.


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Process from Point/Station       36.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.090(Ac.)
Runoff from this stream =     26.174(CFS)
Time of concentration =    8.48 min.
Rainfall intensity =     3.666(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       26.174      8.48                 3.666
Largest stream flow has longer time of concentration
Qp =     26.174 + sum of
Qp =     26.174

Total of 1 streams to confluence:
Flow rates before confluence point:
      26.174
Area of streams before confluence:
        8.090
Results of confluence:
Total flow rate =     26.174(CFS)
Time of concentration =     8.484 min.
Effective stream area after confluence =      8.090(Ac.)


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Process from Point/Station       32.410 to Point/Station       32.420
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =  1482.500(Ft.)
Bottom (of initial area) elevation =  1480.100(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.00819  s(percent)=       0.82
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.382 min.
Rainfall intensity =      3.476(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.281(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       38.100 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
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____________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
Pipe length  =    12.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.281(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.281(CFS)
Normal flow depth in pipe =    5.02(In.)
Flow top width inside pipe =    8.94(In.)
Critical Depth =    6.25(In.)
Pipe flow velocity =      5.05(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.42 min.


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Process from Point/Station       36.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.281(CFS)
Time of concentration =    9.42 min.
Rainfall intensity =     3.468(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       26.174      8.48                 3.666
2        1.281      9.42                 3.468
Largest stream flow has longer or shorter time of concentration
Qp =     26.174 + sum of
          Qa          Tb/Ta
           1.281 *    0.901 =      1.154
Qp =     27.328

Total of 2 streams to confluence:
Flow rates before confluence point:
      26.174       1.281
Area of streams before confluence:
        8.090        0.420
Results of confluence:
Total flow rate =     27.328(CFS)
Time of concentration =     8.484 min.
Effective stream area after confluence =      8.510(Ac.)
End of computations, total study area =            8.51 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.341
Area averaged RI index number =  67.3
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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/21/18  File:27259RAT2943.out
------------------------------------------------------------------------
  PM #13523
 MILL CREEK PROMENADE
 Area A Western Side - RAT - Q100 (onsite)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       29.600 to Point/Station       29.500
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   189.000(Ft.)
Top (of initial area) elevation =  1491.700(Ft.)
Bottom (of initial area) elevation =  1481.200(Ft.)
Difference in elevation =    10.500(Ft.)
Slope =    0.05556  s(percent)=       5.56
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.368 min.
Rainfall intensity =      4.672(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.362(CFS)
```

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Total initial stream area =        0.330(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       29.500 to Point/Station       29.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.200(Ft.)
Downstream point/station elevation =  1480.800(Ft.)
Pipe length  =   144.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.362(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.362(CFS)
Normal flow depth in pipe =    7.59(In.)
Flow top width inside pipe =   11.57(In.)
Critical Depth =    5.92(In.)
Pipe flow velocity =      2.60(Ft/s)
Travel time through pipe =    0.93 min.
Time of concentration (TC) =     6.30 min.


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Process from Point/Station       29.500 to Point/Station       29.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.330(Ac.)
Runoff from this stream =      1.362(CFS)
Time of concentration =    6.30 min.
Rainfall intensity =     4.294(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.362      6.30                 4.294
Largest stream flow has longer time of concentration
Qp =      1.362 + sum of
Qp =      1.362

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.362
Area of streams before confluence:
        0.330
Results of confluence:
Total flow rate =      1.362(CFS)
Time of concentration =     6.296 min.
Effective stream area after confluence =      0.330(Ac.)


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Process from Point/Station       29.400 to Point/Station       29.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   217.000(Ft.)
Top (of initial area) elevation =  1492.500(Ft.)
Bottom (of initial area) elevation =  1481.400(Ft.)
Difference in elevation =    11.100(Ft.)
Slope =    0.05115  s(percent)=       5.12
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
```

```
Initial area time of concentration =    5.768 min.
Rainfall intensity =      4.498(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.389(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       29.300 to Point/Station       29.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1481.400(Ft.)
Downstream point/station elevation =  1480.800(Ft.)
Pipe length  =    59.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.389(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.389(CFS)
Normal flow depth in pipe =    6.29(In.)
Flow top width inside pipe =    8.25(In.)
Critical Depth =    6.52(In.)
Pipe flow velocity =      4.21(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     6.00 min.


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Process from Point/Station       29.500 to Point/Station       29.200
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.350(Ac.)
Runoff from this stream =      1.389(CFS)
Time of concentration =    6.00 min.
Rainfall intensity =     4.404(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.362      6.30                 4.294
2        1.389      6.00                 4.404
Largest stream flow has longer or shorter time of concentration
Qp =      1.389 + sum of
         Qa          Tb/Ta
          1.362 *    0.953 =      1.298
Qp =      2.687

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.362       1.389
Area of streams before confluence:
        0.330        0.350
Results of confluence:
Total flow rate =      2.687(CFS)
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Time of concentration =     6.003 min.
Effective stream area after confluence =      0.680(Ac.)


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Process from Point/Station       29.200 to Point/Station       29.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.800(Ft.)
Downstream point/station elevation =  1480.000(Ft.)
Pipe length  =    91.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.687(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.687(CFS)
Normal flow depth in pipe =    8.18(In.)
Flow top width inside pipe =   11.18(In.)
Critical Depth =    8.43(In.)
Pipe flow velocity =      4.71(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     6.33 min.


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Process from Point/Station       29.200 to Point/Station       29.100
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.680(Ac.)
Runoff from this stream =      2.687(CFS)
Time of concentration =    6.33 min.
Rainfall intensity =     4.282(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.687      6.33                 4.282
Largest stream flow has longer time of concentration
Qp =      2.687 + sum of
Qp =      2.687

Total of 1 streams to confluence:
Flow rates before confluence point:
       2.687
Area of streams before confluence:
        0.680
Results of confluence:
Total flow rate =      2.687(CFS)
Time of concentration =     6.328 min.
Effective stream area after confluence =      0.680(Ac.)


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Process from Point/Station       29.110 to Point/Station       29.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   189.000(Ft.)
Top (of initial area) elevation =  1487.800(Ft.)
Bottom (of initial area) elevation =  1480.000(Ft.)
Difference in elevation =     7.800(Ft.)
Slope =    0.04127  s(percent)=       4.13
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
```

```
Initial area time of concentration =    5.697 min.
Rainfall intensity =      4.528(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.319(CFS)
Total initial stream area =        0.330(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       29.200 to Point/Station       29.100
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.330(Ac.)
Runoff from this stream =      1.319(CFS)
Time of concentration =    5.70 min.
Rainfall intensity =     4.528(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.687      6.33                 4.282
2        1.319      5.70                 4.528
Largest stream flow has longer time of concentration
Qp =      2.687 + sum of
         Qb         Ia/Ib
          1.319 *    0.946 =      1.247
Qp =      3.934

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.687       1.319
Area of streams before confluence:
        0.680        0.330
Results of confluence:
Total flow rate =      3.934(CFS)
Time of concentration =     6.328 min.
Effective stream area after confluence =      1.010(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       29.100 to Point/Station       29.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.000(Ft.)
Downstream point/station elevation =  1479.500(Ft.)
Pipe length  =   101.60(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.934(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.934(CFS)
Normal flow depth in pipe =   10.80(In.)
Flow top width inside pipe =   13.47(In.)
Critical Depth =    9.62(In.)
Pipe flow velocity =      4.16(Ft/s)
```

```
Travel time through pipe =    0.41 min.
Time of concentration (TC) =     6.74 min.


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Process from Point/Station       29.100 to Point/Station       29.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.010(Ac.)
Runoff from this stream =      3.934(CFS)
Time of concentration =    6.74 min.
Rainfall intensity =     4.143(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.934      6.74                 4.143
Largest stream flow has longer time of concentration
Qp =      3.934 + sum of
Qp =      3.934

Total of 1 streams to confluence:
Flow rates before confluence point:
       3.934
Area of streams before confluence:
        1.010
Results of confluence:
Total flow rate =      3.934(CFS)
Time of concentration =     6.735 min.
Effective stream area after confluence =      1.010(Ac.)


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Process from Point/Station       27.000 to Point/Station       29.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________
Rainfall intensity =      3.660(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
User specified values are as follows:
TC =   8.51 min.  Rain intensity =       3.66(In/Hr)
Total area =         5.86(Ac.)  Total runoff =     18.43(CFS)


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Process from Point/Station       29.000 to Point/Station       29.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.860(Ac.)
Runoff from this stream =     18.430(CFS)
Time of concentration =    8.51 min.
Rainfall intensity =     3.660(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.934      6.74                 4.143
2       18.430      8.51                 3.660
Largest stream flow has longer time of concentration
Qp =     18.430 + sum of
         Qb         Ia/Ib
          3.934 *    0.883 =      3.476
Qp =     21.906

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.934      18.430
Area of streams before confluence:
        1.010        5.860
Results of confluence:
Total flow rate =     21.906(CFS)
Time of concentration =     8.510 min.
Effective stream area after confluence =      6.870(Ac.)


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Process from Point/Station       29.000 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.500(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    86.10(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.906(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    21.906(CFS)
Normal flow depth in pipe =   23.16(In.)
Flow top width inside pipe =   18.87(In.)
Critical Depth =   19.66(In.)
Pipe flow velocity =      6.03(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =     8.75 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.870(Ac.)
Runoff from this stream =     21.906(CFS)
Time of concentration =    8.75 min.
Rainfall intensity =     3.607(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.906      8.75                 3.607
Largest stream flow has longer time of concentration
Qp =     21.906 + sum of
Qp =     21.906

Total of 1 streams to confluence:
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```
Flow rates before confluence point:
      21.906
Area of streams before confluence:
        6.870
Results of confluence:
Total flow rate =     21.906(CFS)
Time of concentration =     8.748 min.
Effective stream area after confluence =      6.870(Ac.)


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Process from Point/Station       31.300 to Point/Station       31.310
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   527.000(Ft.)
Top (of initial area) elevation =  1491.600(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =     7.600(Ft.)
Slope =    0.01442  s(percent)=       1.44
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.596 min.
Rainfall intensity =      3.259(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      2.284(CFS)
Total initial stream area =        0.800(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.200 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.300(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.284(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.284(CFS)
Normal flow depth in pipe =    6.35(In.)
Flow top width inside pipe =   11.98(In.)
Critical Depth =    7.75(In.)
Pipe flow velocity =      5.42(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    10.64 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.800(Ac.)
Runoff from this stream =      2.284(CFS)
Time of concentration =   10.64 min.
Rainfall intensity =     3.251(In/Hr)
Summary of stream data:
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```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.906      8.75                 3.607
2        2.284     10.64                 3.251
Largest stream flow has longer or shorter time of concentration
Qp =     21.906 + sum of
         Qa          Tb/Ta
          2.284 *    0.822 =      1.878
Qp =     23.784

Total of 2 streams to confluence:
Flow rates before confluence point:
      21.906       2.284
Area of streams before confluence:
        6.870        0.800
Results of confluence:
Total flow rate =     23.784(CFS)
Time of concentration =     8.748 min.
Effective stream area after confluence =      7.670(Ac.)


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Process from Point/Station       31.500 to Point/Station       31.510
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   313.000(Ft.)
Top (of initial area) elevation =  1488.000(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.01278  s(percent)=       1.28
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.813 min.
Rainfall intensity =      3.593(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.073(CFS)
Total initial stream area =        0.340(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.100 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.300(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.073(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.073(CFS)
Normal flow depth in pipe =    4.79(In.)
Flow top width inside pipe =    8.98(In.)
Critical Depth =    5.71(In.)
Pipe flow velocity =      4.48(Ft/s)
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Travel time through pipe =    0.05 min.
Time of concentration (TC) =     8.87 min.


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Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.340(Ac.)
Runoff from this stream =      1.073(CFS)
Time of concentration =    8.87 min.
Rainfall intensity =     3.581(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.906      8.75                 3.607
2        2.284     10.64                 3.251
3        1.073      8.87                 3.581
Largest stream flow has longer or shorter time of concentration
Qp =     21.906 + sum of
         Qa          Tb/Ta
          2.284 *    0.822 =      1.878
         Qa          Tb/Ta
          1.073 *    0.987 =      1.058
Qp =     24.842

Total of 3 streams to confluence:
Flow rates before confluence point:
      21.906       2.284       1.073
Area of streams before confluence:
        6.870        0.800        0.340
Results of confluence:
Total flow rate =     24.842(CFS)
Time of concentration =     8.748 min.
Effective stream area after confluence =      8.010(Ac.)


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Process from Point/Station       31.400 to Point/Station       31.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   246.000(Ft.)
Top (of initial area) elevation =  1486.500(Ft.)
Bottom (of initial area) elevation =  1479.400(Ft.)
Difference in elevation =     7.100(Ft.)
Slope =    0.02886  s(percent)=       2.89
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.800 min.
Rainfall intensity =      4.122(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.561(CFS)
Total initial stream area =        0.430(Ac.)
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Pervious area fraction = 0.350


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Process from Point/Station       31.100 to Point/Station       31.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.400(Ft.)
Downstream point/station elevation =  1479.100(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.561(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.561(CFS)
Normal flow depth in pipe =    5.34(In.)
Flow top width inside pipe =    8.84(In.)
Critical Depth =    6.90(In.)
Pipe flow velocity =      5.72(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     6.84 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       29.000 to Point/Station       31.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.430(Ac.)
Runoff from this stream =      1.561(CFS)
Time of concentration =    6.84 min.
Rainfall intensity =     4.109(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.906      8.75                 3.607
2        2.284     10.64                 3.251
3        1.073      8.87                 3.581
4        1.561      6.84                 4.109
Largest stream flow has longer or shorter time of concentration
Qp =     21.906 + sum of
         Qa          Tb/Ta
          2.284 *    0.822 =      1.878
         Qa          Tb/Ta
          1.073 *    0.987 =      1.058
         Qb         Ia/Ib
          1.561 *    0.878 =      1.371
Qp =     26.213

Total of 4 streams to confluence:
Flow rates before confluence point:
      21.906       2.284       1.073       1.561
Area of streams before confluence:
        6.870        0.800        0.340        0.430
Results of confluence:
Total flow rate =     26.213(CFS)
Time of concentration =     8.748 min.
Effective stream area after confluence =      8.440(Ac.)


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Process from Point/Station       31.000 to Point/Station       33.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.100(Ft.)
Downstream point/station elevation =  1478.600(Ft.)
Pipe length  =   106.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.213(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    26.213(CFS)
Normal flow depth in pipe =   22.99(In.)
Flow top width inside pipe =   25.39(In.)
Critical Depth =   20.93(In.)
Pipe flow velocity =      6.49(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =     9.02 min.


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Process from Point/Station       33.100 to Point/Station       33.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   241.000(Ft.)
Top (of initial area) elevation =  1485.100(Ft.)
Bottom (of initial area) elevation =  1478.600(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.02697  s(percent)=       2.70
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.836 min.
Rainfall intensity =      4.111(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.521(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       31.000 to Point/Station       33.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.521(CFS)
Time of concentration =    6.84 min.
Rainfall intensity =     4.111(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.906      8.75                 3.607
2        1.521      6.84                 4.111
Largest stream flow has longer time of concentration
Qp =     21.906 + sum of
         Qb         Ia/Ib
          1.521 *    0.878 =      1.334
Qp =     23.240
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
      21.906       1.521
Area of streams before confluence:
        6.870        0.420
Results of confluence:
Total flow rate =     23.240(CFS)
Time of concentration =     8.748 min.
Effective stream area after confluence =      7.290(Ac.)


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Process from Point/Station       33.000 to Point/Station       35.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.600(Ft.)
Downstream point/station elevation =  1478.100(Ft.)
Pipe length  =    90.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.240(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    23.240(CFS)
Normal flow depth in pipe =   22.36(In.)
Flow top width inside pipe =   20.37(In.)
Critical Depth =   20.23(In.)
Pipe flow velocity =      6.61(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     8.98 min.


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Process from Point/Station       33.000 to Point/Station       35.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.290(Ac.)
Runoff from this stream =     23.240(CFS)
Time of concentration =    8.98 min.
Rainfall intensity =     3.558(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.240      8.98                 3.558
Largest stream flow has longer time of concentration
Qp =     23.240 + sum of
Qp =     23.240

Total of 1 streams to confluence:
Flow rates before confluence point:
      23.240
Area of streams before confluence:
        7.290
Results of confluence:
Total flow rate =     23.240(CFS)
Time of concentration =     8.976 min.
Effective stream area after confluence =      7.290(Ac.)


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Process from Point/Station       35.100 to Point/Station       35.000
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**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   242.000(Ft.)
Top (of initial area) elevation =  1484.200(Ft.)
Bottom (of initial area) elevation =  1478.100(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.02521  s(percent)=       2.52
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.941 min.
Rainfall intensity =      4.078(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.544(CFS)
Total initial stream area =        0.430(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       33.000 to Point/Station       35.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.430(Ac.)
Runoff from this stream =      1.544(CFS)
Time of concentration =    6.94 min.
Rainfall intensity =     4.078(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.240      8.98                 3.558
2        1.544      6.94                 4.078
Largest stream flow has longer time of concentration
Qp =     23.240 + sum of
         Qb         Ia/Ib
          1.544 *    0.873 =      1.347
Qp =     24.588

Total of 2 streams to confluence:
Flow rates before confluence point:
      23.240       1.544
Area of streams before confluence:
        7.290        0.430
Results of confluence:
Total flow rate =     24.588(CFS)
Time of concentration =     8.976 min.
Effective stream area after confluence =      7.720(Ac.)


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Process from Point/Station       35.000 to Point/Station       37.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1478.100(Ft.)
Downstream point/station elevation =  1477.900(Ft.)
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Pipe length  =    48.30(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.588(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    24.588(CFS)
Normal flow depth in pipe =   22.92(In.)
Flow top width inside pipe =   25.47(In.)
Critical Depth =   20.27(In.)
Pipe flow velocity =      6.11(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     9.11 min.


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Process from Point/Station       35.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.720(Ac.)
Runoff from this stream =     24.588(CFS)
Time of concentration =    9.11 min.
Rainfall intensity =     3.531(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       24.588      9.11                 3.531
Largest stream flow has longer time of concentration
Qp =     24.588 + sum of
Qp =     24.588

Total of 1 streams to confluence:
Flow rates before confluence point:
      24.588
Area of streams before confluence:
        7.720
Results of confluence:
Total flow rate =     24.588(CFS)
Time of concentration =     9.108 min.
Effective stream area after confluence =      7.720(Ac.)


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Process from Point/Station       37.100 to Point/Station       37.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =  1483.700(Ft.)
Bottom (of initial area) elevation =  1477.900(Ft.)
Difference in elevation =     5.800(Ft.)
Slope =    0.02348  s(percent)=       2.35
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.098 min.
Rainfall intensity =      4.030(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
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Initial subarea runoff =      1.490(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station       35.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.420(Ac.)
Runoff from this stream =      1.490(CFS)
Time of concentration =    7.10 min.
Rainfall intensity =     4.030(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       24.588      9.11                 3.531
2        1.490      7.10                 4.030
Largest stream flow has longer time of concentration
Qp =     24.588 + sum of
         Qb         Ia/Ib
          1.490 *    0.876 =      1.306
Qp =     25.893

Total of 2 streams to confluence:
Flow rates before confluence point:
      24.588       1.490
Area of streams before confluence:
        7.720        0.420
Results of confluence:
Total flow rate =     25.893(CFS)
Time of concentration =     9.108 min.
Effective stream area after confluence =      8.140(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.900(Ft.)
Downstream point/station elevation =  1477.600(Ft.)
Pipe length  =    73.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.893(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    25.893(CFS)
Normal flow depth in pipe =   24.23(In.)
Flow top width inside pipe =   23.64(In.)
Critical Depth =   20.81(In.)
Pipe flow velocity =      6.09(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     9.31 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       39.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.140(Ac.)
```

```
Runoff from this stream =     25.893(CFS)
Time of concentration =    9.31 min.
Rainfall intensity =     3.490(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.893      9.31                 3.490
Largest stream flow has longer time of concentration
Qp =     25.893 + sum of
Qp =     25.893

Total of 1 streams to confluence:
Flow rates before confluence point:
      25.893
Area of streams before confluence:
        8.140
Results of confluence:
Total flow rate =     25.893(CFS)
Time of concentration =     9.308 min.
Effective stream area after confluence =      8.140(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.200 to Point/Station       39.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   251.000(Ft.)
Top (of initial area) elevation =  1482.600(Ft.)
Bottom (of initial area) elevation =  1477.900(Ft.)
Difference in elevation =     4.700(Ft.)
Slope =    0.01873  s(percent)=       1.87
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.475 min.
Rainfall intensity =      3.921(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.001(CFS)
Total initial stream area =        0.290(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.100 to Point/Station       39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.900(Ft.)
Downstream point/station elevation =  1477.600(Ft.)
Pipe length  =    14.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.001(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.001(CFS)
Normal flow depth in pipe =    4.05(In.)
Flow top width inside pipe =    8.95(In.)
Critical Depth =    5.51(In.)
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Pipe flow velocity =      5.19(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.52 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       39.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.290(Ac.)
Runoff from this stream =      1.001(CFS)
Time of concentration =    7.52 min.
Rainfall intensity =     3.908(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.893      9.31                 3.490
2        1.001      7.52                 3.908
Largest stream flow has longer time of concentration
Qp =     25.893 + sum of
         Qb         Ia/Ib
          1.001 *    0.893 =      0.894
Qp =     26.787

Total of 2 streams to confluence:
Flow rates before confluence point:
      25.893       1.001
Area of streams before confluence:
        8.140        0.290
Results of confluence:
Total flow rate =     26.787(CFS)
Time of concentration =     9.308 min.
Effective stream area after confluence =      8.430(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.300 to Point/Station       39.310
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   333.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1480.800(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.01051  s(percent)=       1.05
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.394 min.
Rainfall intensity =      3.473(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.250(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.350
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Process from Point/Station       39.100 to Point/Station       39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.900(Ft.)
Downstream point/station elevation =  1477.600(Ft.)
Pipe length  =    14.20(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.250(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.250(CFS)
Normal flow depth in pipe =    4.61(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    6.18(In.)
Pipe flow velocity =      5.50(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.44 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       39.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.410(Ac.)
Runoff from this stream =      1.250(CFS)
Time of concentration =    9.44 min.
Rainfall intensity =     3.465(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.893      9.31                 3.490
2        1.001      7.52                 3.908
3        1.250      9.44                 3.465
Largest stream flow has longer or shorter time of concentration
Qp =     25.893 + sum of
         Qb         Ia/Ib
          1.001 *    0.893 =      0.894
         Qa          Tb/Ta
          1.250 *    0.986 =      1.233
Qp =     28.020

Total of 3 streams to confluence:
Flow rates before confluence point:
      25.893       1.001       1.250
Area of streams before confluence:
        8.140        0.290        0.410
Results of confluence:
Total flow rate =     28.020(CFS)
Time of concentration =     9.308 min.
Effective stream area after confluence =      8.840(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.000 to Point/Station       41.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.600(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    26.30(Ft.)   Manning's N = 0.013
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No. of pipes = 1  Required pipe flow  =    28.020(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    28.020(CFS)
Normal flow depth in pipe =   23.16(In.)
Flow top width inside pipe =   18.87(In.)
Critical Depth =   22.09(In.)
Pipe flow velocity =      7.72(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     9.37 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.400 to Point/Station       39.410
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   352.000(Ft.)
Top (of initial area) elevation =  1485.100(Ft.)
Bottom (of initial area) elevation =  1480.700(Ft.)
Difference in elevation =     4.400(Ft.)
Slope =    0.01250  s(percent)=       1.25
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.278 min.
Rainfall intensity =      3.496(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      1.074(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.200 to Point/Station       41.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.800(Ft.)
Downstream point/station elevation =  1477.400(Ft.)
Pipe length  =    14.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.074(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.074(CFS)
Normal flow depth in pipe =    3.92(In.)
Flow top width inside pipe =    8.93(In.)
Critical Depth =    5.72(In.)
Pipe flow velocity =      5.81(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.000 to Point/Station       41.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.350(Ac.)
Runoff from this stream =      1.074(CFS)
Time of concentration =    9.32 min.
Rainfall intensity =     3.488(In/Hr)
```

```
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.893      9.31                 3.490
2        1.074      9.32                 3.488
Largest stream flow has longer or shorter time of concentration
Qp =     25.893 + sum of
         Qa          Tb/Ta
          1.074 *    0.999 =      1.073
Qp =     26.966

Total of 2 streams to confluence:
Flow rates before confluence point:
      25.893       1.074
Area of streams before confluence:
        8.140        0.350
Results of confluence:
Total flow rate =     26.966(CFS)
Time of concentration =     9.308 min.
Effective stream area after confluence =      8.490(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       41.000 to Point/Station       38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
Pipe length  =    45.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.966(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    26.966(CFS)
Normal flow depth in pipe =   24.33(In.)
Flow top width inside pipe =   23.49(In.)
Critical Depth =   21.26(In.)
Pipe flow velocity =      6.32(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     9.43 min.
End of computations, total study area =           10.76 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.350
Area averaged RI index number =  67.3
```

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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/21/18  File:27259RATA.out
----------------------------------------------------------------------
  PM #13523
 MILL CREEK PROMENADE
 Area A - RAT - Q100 (onsite)

----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

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Program License Serial Number 4066

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       39.000 to Point/Station       39.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________
Rainfall intensity =      3.466(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
User specified values are as follows:
TC =   9.43 min.  Rain intensity =       3.47(In/Hr)
Total area =        10.76(Ac.)  Total runoff =     27.00(CFS)


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Process from Point/Station       39.000 to Point/Station       38.000
```

```
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1477.400(Ft.)
Downstream point/station elevation =  1477.200(Ft.)
Pipe length  =    45.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.000(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    27.000(CFS)
Normal flow depth in pipe =   24.38(In.)
Flow top width inside pipe =   23.42(In.)
Critical Depth =   21.26(In.)
Pipe flow velocity =      6.32(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     9.55 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       39.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     10.760(Ac.)
Runoff from this stream =     27.000(CFS)
Time of concentration =    9.55 min.
Rainfall intensity =     3.443(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       27.000      9.55                 3.443
Largest stream flow has longer time of concentration
Qp =     27.000 + sum of
Qp =     27.000

Total of 1 streams to confluence:
Flow rates before confluence point:
      27.000
Area of streams before confluence:
       10.760
Results of confluence:
Total flow rate =     27.000(CFS)
Time of concentration =     9.550 min.
Effective stream area after confluence =     10.760(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       36.000 to Point/Station       38.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
_____________________________________________________________________
Rainfall intensity =      3.662(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
User specified values are as follows:
TC =   8.50 min.  Rain intensity =       3.66(In/Hr)
Total area =         9.04(Ac.)  Total runoff =     27.10(CFS)
```

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Process from Point/Station       39.000 to Point/Station       38.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      9.040(Ac.)
Runoff from this stream =     27.100(CFS)
Time of concentration =    8.50 min.
Rainfall intensity =     3.662(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       27.000      9.55                 3.443
2       27.100      8.50                 3.662
Largest stream flow has longer or shorter time of concentration
Qp =     27.100 + sum of
         Qa          Tb/Ta
         27.000 *    0.890 =     24.032
Qp =     51.132

Total of 2 streams to confluence:
Flow rates before confluence point:
      27.000      27.100
Area of streams before confluence:
       10.760        9.040
Results of confluence:
Total flow rate =     51.132(CFS)
Time of concentration =     8.500 min.
Effective stream area after confluence =     19.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       38.000 to Point/Station       40.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1477.200(Ft.)
Downstream point/station elevation =  1477.000(Ft.)
Pipe length  =    31.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    51.132(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    51.132(CFS)
Normal flow depth in pipe =   28.50(In.)
Flow top width inside pipe =   29.24(In.)
Critical Depth =   27.93(In.)
Pipe flow velocity =      8.51(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     8.56 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       40.000 to Point/Station       42.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1477.000(Ft.)
Downstream point elevation =  1475.500(Ft.)
Channel length thru subarea  =   149.000(Ft.)
Channel base width  =   48.000(Ft.)
Slope or 'Z' of left channel bank =   4.000
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Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =     52.302(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    4.000(Ft.)
Flow(q) thru subarea =     52.302(CFS)
Depth of flow =   0.264(Ft.), Average velocity =   4.033(Ft/s)
Channel flow top width =   50.115(Ft.)
Flow Velocity =    4.03(Ft/s)
Travel time  =    0.62 min.
Time of concentration =    9.18 min.

Sub-Channel No. 1 Critical depth =      0.328(Ft.)
  '     '       '     Critical flow top width =     50.625(Ft.)
  '     '       '     Critical flow velocity=    3.232(Ft/s)
  '     '       '     Critical flow area =     16.181(Sq.Ft)

 Adding area flow to channel
CONDOMINIUM subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.350; Impervious fraction =  0.650
Rainfall intensity =      3.516(In/Hr) for a   100.0 year storm
Subarea runoff =      2.439(CFS) for      0.790(Ac.)
Total runoff =     53.571(CFS)   Total area =      20.590(Ac.)
Depth of flow =   0.268(Ft.), Average velocity =   4.071(Ft/s)

Sub-Channel No. 1 Critical depth =      0.336(Ft.)
  '     '       '     Critical flow top width =     50.688(Ft.)
  '     '       '     Critical flow velocity=    3.232(Ft/s)
  '     '       '     Critical flow area =     16.576(Sq.Ft)

End of computations, total study area =           20.59 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.350
Area averaged RI index number =  67.3
```

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area B- Areas, Length of Concentration, Nodes

Area B
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
B		1.00	859	509	202	1494.00	201.00	1488.10	5.90
		Run-off Index			Commercial				
			soil B	25%	56	14			
			soil C	50%	69	35			
			soil D	25%	75	19			
					RI=	67			

Imperviousness- COMMERCIAL = 0.9

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 02/09/18  File:27259RATB10.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
Area B - RAT - Q10 (onsite) PROPOSED

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station      202.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   759.000(Ft.)
Top (of initial area) elevation =  1493.800(Ft.)
Bottom (of initial area) elevation =  1488.100(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00751  s(percent)=       0.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.326 min.
Rainfall intensity =      2.105(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
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Initial subarea runoff =      1.850(CFS)
Total initial stream area =        1.000(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      201.100 to Point/Station      602.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.850(Ft.)
Downstream point/station elevation =  1478.150(Ft.)
Pipe length  =   543.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.850(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.850(CFS)
Normal flow depth in pipe =    7.65(In.)
Flow top width inside pipe =   11.54(In.)
Critical Depth =    6.95(In.)
Pipe flow velocity =      3.50(Ft/s)
Travel time through pipe =    2.59 min.
Time of concentration (TC) =    13.91 min.
End of computations, total study area =            1.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 02/09/18  File:27259RATB100.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
Area B - RAT - Q100 (onsite) PROPOSED

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300

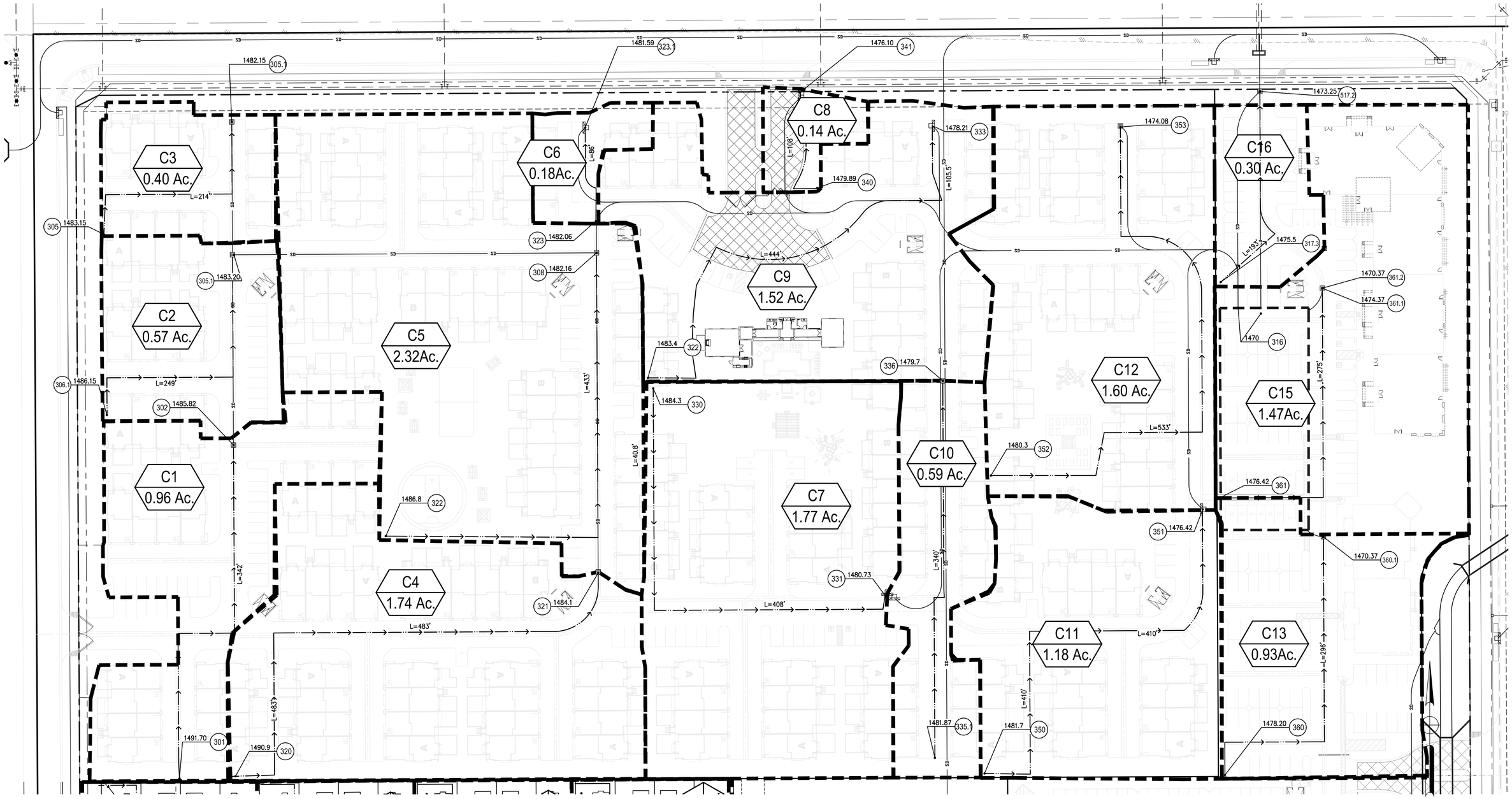



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   759.000(Ft.)
Top (of initial area) elevation =  1493.800(Ft.)
Bottom (of initial area) elevation =  1488.100(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00751  s(percent)=       0.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.326 min.
Rainfall intensity =      3.146(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      2.809(CFS)
Total initial stream area =        1.000(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.100 to Point/Station      602.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1480.850(Ft.)
Downstream point/station elevation =  1478.150(Ft.)
Pipe length  =   543.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.809(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     2.809(CFS)
Normal flow depth in pipe =    8.52(In.)
Flow top width inside pipe =   14.86(In.)
Critical Depth =    8.07(In.)
Pipe flow velocity =      3.90(Ft/s)
Travel time through pipe =    2.32 min.
Time of concentration (TC) =    13.64 min.
End of computations, total study area =            1.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```



Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

REVISIONS

SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:
CHRIS D. HOPPER
RCE NO. 34821
DATE
Benjie

SEAL
REGISTERED PROFESSIONAL ENGINEER
CHRIS D. HOPPER
No. 34821
Exp. 9/30/17
CIVIL
STATE OF CALIFORNIA

SCALE:	1" =150'
DESIGN:	BAM/REK
DRAWN:	BENJIE/RGS
CHECKED:	HJK/BAM
APPROVED:	HJK/TPV
DATE:	MARCH, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH
DIRECTOR OF PUBLIC WORKS/
CITY ENGINEER
RCE 61253
EXP. 6/30/16
DATE

RECOMMENDED BY:
DATE

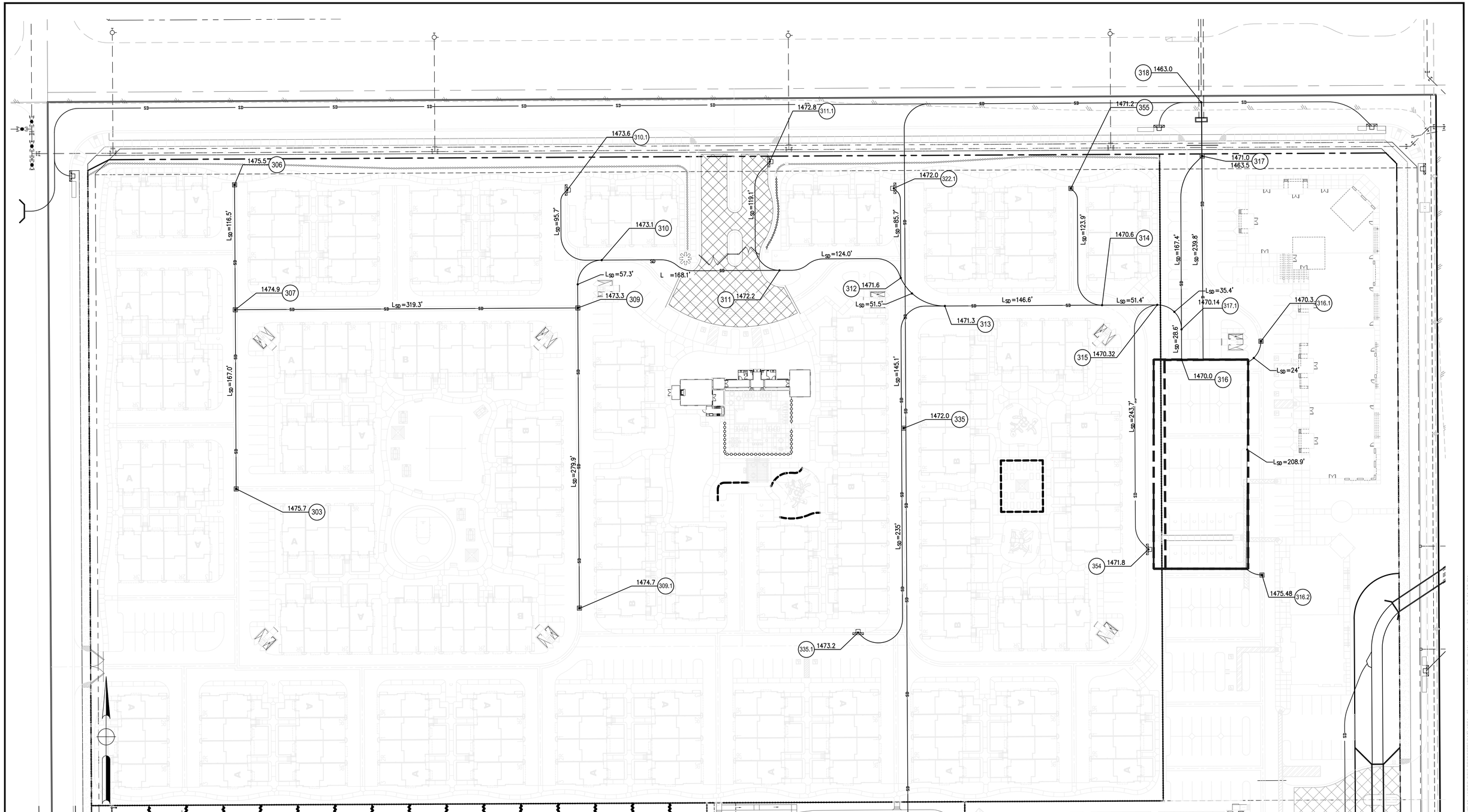
CITY OF MENIFEE

DRAINAGE MAP
MILLCREEK PROMENADE
PROPOSED AREA C DEVELOPMENT

SHEET NO.
1 OF 1

PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\PROPOSED\RATI\AREA-C\proposed AREA C-HYDRO PLAN.dwg 1-20-18 04:47:36 PM



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REVISIONS					
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APPROVED:	HJK/TPV
DATE:	MARCH, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH — RCE 61253 — DATE
DIRECTOR OF PUBLIC WORKS/ — EXP. 6/30/16
CITY ENGINEER

RECOMMENDED BY: — DATE

CITY OF MENIFEE

DRAINAGE MAP
MILLCREEK PROMENADE
PROPOSED AREA C DEVELOPMENT SD

SHEET NO.
1 OF 1
PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\PROPOSED\PA1\AREA-C\proposed AREA C-SD PLAN.dwg 1-30-18 04:51:27 PM

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area C- Areas, Length of Concentration, Nodes

Area C
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Node Up	Elev	Node Dn	Elev	ΔH
C1		0.96	342	301	1491.70	302.00	1485.82	5.88
C2		0.57	249	306.1	1486.15	306.20	1483.20	2.95
C3		0.40	209	305.2	1483.15	305.10	1482.15	1.00
C4		1.74	483	320	1490.90	321.00	1484.10	6.80
C5		2.32	433	322	1486.80	308.00	1482.16	4.64
C6		0.81	86	323	1482.06	323.10	1481.59	0.47
C7		1.77	408	330	1484.30	331.00	1480.73	3.57
C8		0.14	108	340	1479.89	341.00	1476.01	3.88
C9		1.52	444	322	1483.40	323.00	1478.21	5.19
C10		0.59	340	335.1	1481.70	336.00	1479.70	2.00
C11		1.18	410	350	1481.70	351.00	1476.42	5.28
C12		1.60	533	352	1480.30	353.00	1474.08	6.22
C13		0.93	294	360	1478.20	360.10	1470.37	7.83
C15		1.47	275	361	1476.42	361.10	1474.37	2.05
C16		0.30	193	317.3	1475.50	317.20	1473.25	2.25
	total	16.30						

Run-off Index			Apartments	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	68

Imperviousness- APARTMENTS = 80

```
              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/19/18  File:27259RATC81610.out
----------------------------------------------------------------------------
   PM #13523
 MILL CREEK PROMENADE
 Area C - RAT - Q10 (onsite)
----------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------------


Program License Serial Number 4066

----------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      312.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________
Rainfall intensity =      2.249(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.860
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
User specified values are as follows:
TC =  10.00 min.  Rain intensity =       2.25(In/Hr)
Total area =         6.94(Ac.)  Total runoff =     14.00(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      312.000
**** CONFLUENCE OF MINOR STREAMS ****
```

```
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.940(Ac.)
Runoff from this stream =     14.000(CFS)
Time of concentration =   10.00 min.
Rainfall intensity =     2.249(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.000     10.00                 2.249
Largest stream flow has longer time of concentration
Qp =     14.000 + sum of
Qp =     14.000

Total of 1 streams to confluence:
Flow rates before confluence point:
      14.000
Area of streams before confluence:
        6.940
Results of confluence:
Total flow rate =     14.000(CFS)
Time of concentration =    10.000 min.
Effective stream area after confluence =      6.940(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      322.000 to Point/Station      323.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   444.000(Ft.)
Top (of initial area) elevation =  1483.400(Ft.)
Bottom (of initial area) elevation =  1478.210(Ft.)
Difference in elevation =     5.190(Ft.)
Slope =    0.01169  s(percent)=       1.17
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.007 min.
Rainfall intensity =      2.377(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      3.112(CFS)
Total initial stream area =        1.520(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.100 to Point/Station      312.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1472.000(Ft.)
Downstream point/station elevation =  1471.600(Ft.)
Pipe length  =    85.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.112(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.112(CFS)
```

```
Normal flow depth in pipe =    9.29(In.)
Flow top width inside pipe =   14.57(In.)
Critical Depth =    8.52(In.)
Pipe flow velocity =      3.90(Ft/s)
Travel time through pipe =    0.37 min.
Time of concentration (TC) =     9.37 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      312.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.520(Ac.)
Runoff from this stream =      3.112(CFS)
Time of concentration =    9.37 min.
Rainfall intensity =     2.327(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.000     10.00                 2.249
2        3.112      9.37                 2.327
Largest stream flow has longer time of concentration
Qp =     14.000 + sum of
         Qb         Ia/Ib
          3.112 *    0.966 =      3.007
Qp =     17.007

Total of 2 streams to confluence:
Flow rates before confluence point:
      14.000       3.112
Area of streams before confluence:
        6.940        1.520
Results of confluence:
Total flow rate =     17.007(CFS)
Time of concentration =    10.000 min.
Effective stream area after confluence =      8.460(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.600(Ft.)
Downstream point/station elevation =  1471.300(Ft.)
Pipe length  =    51.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.007(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    17.007(CFS)
Normal flow depth in pipe =   19.36(In.)
Flow top width inside pipe =   18.96(In.)
Critical Depth =   17.83(In.)
Pipe flow velocity =      6.27(Ft/s)
Travel time through pipe =    0.14 min.
Time of concentration (TC) =    10.14 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MAIN STREAMS ****
```

```
____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.460(Ac.)
Runoff from this stream =     17.007(CFS)
Time of concentration =   10.14 min.
Rainfall intensity =     2.233(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       17.007     10.14           2.233
Largest stream flow has longer time of concentration
Qp =     17.007 + sum of
Qp =     17.007

Total of 1 main streams to confluence:
Flow rates before confluence point:
      17.007
Area of streams before confluence:
        8.460


Results of confluence:
Total flow rate =     17.007(CFS)
Time of concentration =    10.137 min.
Effective stream area after confluence  =      8.460(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      330.000 to Point/Station      331.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   408.000(Ft.)
Top (of initial area) elevation =  1484.300(Ft.)
Bottom (of initial area) elevation =  1480.730(Ft.)
Difference in elevation =     3.570(Ft.)
Slope =    0.00875  s(percent)=       0.87
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.227 min.
Rainfall intensity =      2.347(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      3.576(CFS)
Total initial stream area =        1.770(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.100 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1473.200(Ft.)
Downstream point/station elevation =  1472.000(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
```

```
No. of pipes = 1  Required pipe flow  =     3.576(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.576(CFS)
Normal flow depth in pipe =   10.22(In.)
Flow top width inside pipe =   13.98(In.)
Critical Depth =    9.15(In.)
Pipe flow velocity =      4.02(Ft/s)
Travel time through pipe =    1.06 min.
Time of concentration (TC) =    10.28 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.100 to Point/Station      335.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.770(Ac.)
Runoff from this stream =      3.576(CFS)
Time of concentration =   10.28 min.
Rainfall intensity =     2.216(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.576     10.28                 2.216
Largest stream flow has longer time of concentration
Qp =      3.576 + sum of
Qp =      3.576

Total of 1 streams to confluence:
Flow rates before confluence point:
       3.576
Area of streams before confluence:
        1.770
Results of confluence:
Total flow rate =      3.576(CFS)
Time of concentration =    10.285 min.
Effective stream area after confluence =      1.770(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.100 to Point/Station      336.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   340.000(Ft.)
Top (of initial area) elevation =  1481.870(Ft.)
Bottom (of initial area) elevation =  1479.700(Ft.)
Difference in elevation =     2.170(Ft.)
Slope =    0.00638  s(percent)=       0.64
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.137 min.
Rainfall intensity =      2.359(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      1.199(CFS)
```

```
Total initial stream area =        0.590(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.100 to Point/Station      335.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.590(Ac.)
Runoff from this stream =      1.199(CFS)
Time of concentration =    9.14 min.
Rainfall intensity =     2.359(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.576     10.28                 2.216
2        1.199      9.14                 2.359
Largest stream flow has longer time of concentration
Qp =      3.576 + sum of
         Qb         Ia/Ib
          1.199 *    0.939 =      1.126
Qp =      4.702

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.576       1.199
Area of streams before confluence:
        1.770        0.590
Results of confluence:
Total flow rate =      4.702(CFS)
Time of concentration =    10.285 min.
Effective stream area after confluence =      2.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      335.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1472.000(Ft.)
Downstream point/station elevation =  1471.300(Ft.)
Pipe length  =   145.10(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.702(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     4.702(CFS)
Normal flow depth in pipe =   10.51(In.)
Flow top width inside pipe =   17.74(In.)
Critical Depth =   10.00(In.)
Pipe flow velocity =      4.39(Ft/s)
Travel time through pipe =    0.55 min.
Time of concentration (TC) =    10.84 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.360(Ac.)
```

```
Runoff from this stream =      4.702(CFS)
Time of concentration =   10.84 min.
Rainfall intensity =     2.155(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       17.007     10.14            2.233
2        4.702     10.84            2.155
Largest stream flow has longer or shorter time of concentration
Qp =     17.007 + sum of
         Qa          Tb/Ta
          4.702 *    0.935 =      4.399
Qp =     21.406

Total of 2 main streams to confluence:
Flow rates before confluence point:
      17.007       4.702
Area of streams before confluence:
        8.460        2.360


Results of confluence:
Total flow rate =     21.406(CFS)
Time of concentration =    10.137 min.
Effective stream area after confluence  =     10.820(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      314.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.300(Ft.)
Downstream point/station elevation =  1470.600(Ft.)
Pipe length  =   146.60(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.406(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    21.406(CFS)
Normal flow depth in pipe =   22.13(In.)
Flow top width inside pipe =   20.77(In.)
Critical Depth =   19.43(In.)
Pipe flow velocity =      6.14(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =    10.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      314.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     10.820(Ac.)
Runoff from this stream =     21.406(CFS)
Time of concentration =   10.54 min.
Rainfall intensity =     2.187(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       21.406     10.54                 2.187
Largest stream flow has longer time of concentration
Qp =     21.406 + sum of
Qp =     21.406

Total of 1 streams to confluence:
Flow rates before confluence point:
      21.406
Area of streams before confluence:
       10.820
Results of confluence:
Total flow rate =     21.406(CFS)
Time of concentration =    10.535 min.
Effective stream area after confluence =     10.820(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      352.000 to Point/Station      353.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   533.000(Ft.)
Top (of initial area) elevation =  1480.300(Ft.)
Bottom (of initial area) elevation =  1474.080(Ft.)
Difference in elevation =     6.220(Ft.)
Slope =    0.01167  s(percent)=       1.17
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.694 min.
Rainfall intensity =      2.286(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.860
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      3.146(CFS)
Total initial stream area =        1.600(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      314.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.200(Ft.)
Downstream point/station elevation =  1470.600(Ft.)
Pipe length  =   123.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.146(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.146(CFS)
Normal flow depth in pipe =    9.25(In.)
Flow top width inside pipe =   14.59(In.)
Critical Depth =    8.57(In.)
Pipe flow velocity =      3.96(Ft/s)
Travel time through pipe =    0.52 min.
Time of concentration (TC) =    10.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      314.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
```

```
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.600(Ac.)
Runoff from this stream =      3.146(CFS)
Time of concentration =   10.21 min.
Rainfall intensity =     2.224(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.406     10.54                 2.187
2        3.146     10.21                 2.224
Largest stream flow has longer time of concentration
Qp =     21.406 + sum of
         Qb         Ia/Ib
          3.146 *    0.984 =      3.095
Qp =     24.501

Total of 2 streams to confluence:
Flow rates before confluence point:
      21.406       3.146
Area of streams before confluence:
       10.820        1.600
Results of confluence:
Total flow rate =     24.501(CFS)
Time of concentration =    10.535 min.
Effective stream area after confluence =     12.420(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1470.600(Ft.)
Downstream point/station elevation =  1470.320(Ft.)
Pipe length  =    51.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.501(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    24.501(CFS)
Normal flow depth in pipe =   20.48(In.)
Flow top width inside pipe =   27.92(In.)
Critical Depth =   20.23(In.)
Pipe flow velocity =      6.87(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =    10.66 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.420(Ac.)
Runoff from this stream =     24.501(CFS)
Time of concentration =   10.66 min.
Rainfall intensity =     2.174(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       24.501     10.66                 2.174
Largest stream flow has longer time of concentration
Qp =     24.501 + sum of
Qp =     24.501

Total of 1 streams to confluence:
Flow rates before confluence point:
      24.501
Area of streams before confluence:
       12.420
Results of confluence:
Total flow rate =     24.501(CFS)
Time of concentration =    10.660 min.
Effective stream area after confluence =     12.420(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      350.000 to Point/Station      351.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   410.000(Ft.)
Top (of initial area) elevation =  1481.700(Ft.)
Bottom (of initial area) elevation =  1476.420(Ft.)
Difference in elevation =     5.280(Ft.)
Slope =    0.01288  s(percent)=       1.29
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.557 min.
Rainfall intensity =      2.442(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.862
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      2.485(CFS)
Total initial stream area =        1.180(Ac.)
Pervious area fraction = 0.200


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Process from Point/Station      354.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.800(Ft.)
Downstream point/station elevation =  1470.320(Ft.)
Pipe length  =   243.70(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.485(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.485(CFS)
Normal flow depth in pipe =    8.86(In.)
Flow top width inside pipe =   10.55(In.)
Critical Depth =    8.10(In.)
Pipe flow velocity =      4.00(Ft/s)
Travel time through pipe =    1.02 min.
Time of concentration (TC) =     9.57 min.


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Process from Point/Station      314.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
```

```
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.180(Ac.)
Runoff from this stream =      2.485(CFS)
Time of concentration =    9.57 min.
Rainfall intensity =     2.301(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       24.501     10.66                 2.174
2        2.485      9.57                 2.301
Largest stream flow has longer time of concentration
Qp =     24.501 + sum of
         Qb         Ia/Ib
          2.485 *    0.945 =      2.347
Qp =     26.848

Total of 2 streams to confluence:
Flow rates before confluence point:
      24.501       2.485
Area of streams before confluence:
       12.420        1.180
Results of confluence:
Total flow rate =     26.848(CFS)
Time of concentration =    10.660 min.
Effective stream area after confluence =     13.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      317.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1470.320(Ft.)
Downstream point/station elevation =    70.140(Ft.)
Pipe length  =    35.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.848(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =    26.848(CFS)
Normal flow depth in pipe =    3.91(In.)
Flow top width inside pipe =    5.71(In.)
Critical depth could not be calculated.
Pipe flow velocity =    197.77(Ft/s)
Travel time through pipe =    0.00 min.
Time of concentration (TC) =    10.66 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      317.100
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     13.600(Ac.)
Runoff from this stream =     26.848(CFS)
Time of concentration =   10.66 min.
Rainfall intensity =     2.174(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       26.848     10.66                 2.174
Largest stream flow has longer time of concentration
Qp =     26.848 + sum of
Qp =     26.848

Total of 1 streams to confluence:
Flow rates before confluence point:
      26.848
Area of streams before confluence:
       13.600
Results of confluence:
Total flow rate =     26.848(CFS)
Time of concentration =    10.663 min.
Effective stream area after confluence =     13.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      317.300 to Point/Station      317.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   193.000(Ft.)
Top (of initial area) elevation =  1475.500(Ft.)
Bottom (of initial area) elevation =  1473.250(Ft.)
Difference in elevation =     2.250(Ft.)
Slope =    0.01166  s(percent)=       1.17
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.458 min.
Rainfall intensity =      2.835(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.866
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      0.737(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.200


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Process from Point/Station      317.000 to Point/Station      317.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.000(Ft.)
Downstream point/station elevation =  1470.140(Ft.)
Pipe length  =   167.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.737(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.737(CFS)
Normal flow depth in pipe =    5.13(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    4.69(In.)
Pipe flow velocity =      2.83(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =     7.44 min.


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Process from Point/Station      315.000 to Point/Station      317.100
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
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Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.300(Ac.)
Runoff from this stream =      0.737(CFS)
Time of concentration =    7.44 min.
Rainfall intensity =     2.629(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       26.848     10.66                 2.174
2        0.737      7.44                 2.629
Largest stream flow has longer time of concentration
Qp =     26.848 + sum of
         Qb         Ia/Ib
          0.737 *    0.827 =      0.609
Qp =     27.457

Total of 2 streams to confluence:
Flow rates before confluence point:
      26.848       0.737
Area of streams before confluence:
       13.600        0.300
Results of confluence:
Total flow rate =     27.457(CFS)
Time of concentration =    10.663 min.
Effective stream area after confluence =     13.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      317.100 to Point/Station      316.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1470.140(Ft.)
Downstream point/station elevation =  1470.000(Ft.)
Pipe length  =    28.60(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.457(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    27.457(CFS)
Normal flow depth in pipe =   23.48(In.)
Flow top width inside pipe =   24.74(In.)
Critical Depth =   21.45(In.)
Pipe flow velocity =      6.66(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    10.73 min.
End of computations, total study area =           13.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged RI index number =  67.3
```

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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/19/18  File:27259RATC.out
------------------------------------------------------------------------
 PM #13523
 MILL CREEK PROMENADE
 Area C - RAT - Q100 (onsite)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      360.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   294.000(Ft.)
Top (of initial area) elevation =  1478.200(Ft.)
Bottom (of initial area) elevation =  1470.370(Ft.)
Difference in elevation =     7.830(Ft.)
Slope =    0.02663  s(percent)=       2.66
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.017 min.
Rainfall intensity =      4.398(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.895
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.660(CFS)
```

```
Total initial stream area =        0.930(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      360.200 to Point/Station      316.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.100(Ft.)
Downstream point/station elevation =  1470.000(Ft.)
Pipe length  =   208.90(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.660(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.660(CFS)
Normal flow depth in pipe =    9.97(In.)
Flow top width inside pipe =   14.16(In.)
Critical Depth =    9.27(In.)
Pipe flow velocity =      4.22(Ft/s)
Travel time through pipe =    0.82 min.
Time of concentration (TC) =     6.84 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.200 to Point/Station      316.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.930(Ac.)
Runoff from this stream =      3.660(CFS)
Time of concentration =    6.84 min.
Rainfall intensity =     4.109(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.660      6.84                 4.109
Largest stream flow has longer time of concentration
Qp =      3.660 + sum of
Qp =      3.660

Total of 1 streams to confluence:
Flow rates before confluence point:
       3.660
Area of streams before confluence:
        0.930
Results of confluence:
Total flow rate =      3.660(CFS)
Time of concentration =     6.841 min.
Effective stream area after confluence =      0.930(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      361.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   275.000(Ft.)
Top (of initial area) elevation =  1476.420(Ft.)
Bottom (of initial area) elevation =  1474.370(Ft.)
Difference in elevation =     2.050(Ft.)
Slope =    0.00745  s(percent)=       0.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
```

```
Initial area time of concentration =    7.557 min.
Rainfall intensity =      3.898(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.894
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.124(CFS)
Total initial stream area =        1.470(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      361.200 to Point/Station      361.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1470.370(Ft.)
Downstream point/station elevation =  1470.000(Ft.)
Pipe length  =    24.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.124(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.124(CFS)
Normal flow depth in pipe =    8.71(In.)
Flow top width inside pipe =   14.80(In.)
Critical Depth =   11.02(In.)
Pipe flow velocity =      6.93(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.62 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.200 to Point/Station      361.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.470(Ac.)
Runoff from this stream =      5.124(CFS)
Time of concentration =    7.62 min.
Rainfall intensity =     3.882(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.660      6.84                 4.109
2        5.124      7.62                 3.882
Largest stream flow has longer time of concentration
Qp =      5.124 + sum of
         Qb         Ia/Ib
          3.660 *    0.945 =      3.458
Qp =      8.582

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.660       5.124
Area of streams before confluence:
        0.930        1.470
Results of confluence:
Total flow rate =      8.582(CFS)
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```
Time of concentration =     7.615 min.
Effective stream area after confluence =      2.400(Ac.)


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Process from Point/Station      361.000 to Point/Station      361.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________
Rainfall intensity =      3.250(In/Hr) for a   100.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.200; Impervious fraction =  0.800
User specified values are as follows:
TC =  10.65 min.  Rain intensity =       3.25(In/Hr)
Total area =        13.90(Ac.)  Total runoff =     42.51(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      361.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     13.900(Ac.)
Runoff from this stream =     42.510(CFS)
Time of concentration =   10.65 min.
Rainfall intensity =     3.250(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        3.660      6.84                 4.109
2       42.510     10.65                 3.250
Largest stream flow has longer time of concentration
Qp =     42.510 + sum of
         Qb         Ia/Ib
          3.660 *    0.791 =      2.895
Qp =     45.405

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.660      42.510
Area of streams before confluence:
        0.930       13.900
Results of confluence:
Total flow rate =     45.405(CFS)
Time of concentration =    10.650 min.
Effective stream area after confluence =     14.830(Ac.)
End of computations, total study area =           16.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.185
Area averaged RI index number =  67.3
```

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area D, - Areas, Length of Concentration, Nodes

Area D
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
D		1.20	577	273	400	1489.70	401.00	1484.00	5.70

Run-off Index			Commercial	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	67

Imperviousness- COMMERCIAL = 0.9

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 02/06/18  File:27259RATD.out
----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
Area D- RAT - Q10 (onsite) PROPOSED

----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------


Program License Serial Number 4066

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   577.000(Ft.)
Top (of initial area) elevation =  1489.700(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00988  s(percent)=       0.99
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.608 min.
Rainfall intensity =      2.297(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
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Initial subarea runoff =      2.426(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.900(Ft.)
Downstream point/station elevation =  1477.000(Ft.)
Pipe length  =   434.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.426(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.426(CFS)
Normal flow depth in pipe =    8.37(In.)
Flow top width inside pipe =   11.03(In.)
Critical Depth =    8.00(In.)
Pipe flow velocity =      4.15(Ft/s)
Travel time through pipe =    1.74 min.
Time of concentration (TC) =    11.35 min.
End of computations, total study area =            1.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 02/06/18  File:27259RATD.out
----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
Area D - RAT - Q100 (onsite) PROPOSED

----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------


Program License Serial Number 4066

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   577.000(Ft.)
Top (of initial area) elevation =  1489.700(Ft.)
Bottom (of initial area) elevation =  1484.000(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00988  s(percent)=       0.99
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.608 min.
Rainfall intensity =      3.432(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.894
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      3.680(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1479.900(Ft.)
Downstream point/station elevation =  1477.000(Ft.)
Pipe length  =   434.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.680(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.680(CFS)
Normal flow depth in pipe =    9.22(In.)
Flow top width inside pipe =   14.60(In.)
Critical Depth =    9.29(In.)
Pipe flow velocity =      4.65(Ft/s)
Travel time through pipe =    1.55 min.
Time of concentration (TC) =    11.16 min.
End of computations, total study area =            1.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area E- Areas, Length of Concentration, Nodes

Area E
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev
E1		1.76	710		200	1494.00	501.10	1486.00
E2		3.34	487		501.1	1486.00	501.00	1483.20
	TOTAL	5.10						

Run-off Index			Commercial	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	67

Imperviousness- COMMERCIAL = 0.9

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 02/21/18  File:27259RATE.out
----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
Area E - RAT - Q10 (onsite) PROPOSED

----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------


Program License Serial Number 4066

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      501.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   710.000(Ft.)
Top (of initial area) elevation =  1494.000(Ft.)
Bottom (of initial area) elevation =  1486.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.01127  s(percent)=       1.13
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.169 min.
Rainfall intensity =      2.229(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      3.493(CFS)
Total initial stream area =        1.760(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.100 to Point/Station      501.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1486.000(Ft.)
Downstream point elevation =  1483.200(Ft.)
Channel length thru subarea  =   487.000(Ft.)
Channel base width  =    0.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =      6.279(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =      6.279(CFS)
Depth of flow =   0.256(Ft.), Average velocity =   1.910(Ft/s)
Channel flow top width =   25.643(Ft.)
Flow Velocity =    1.91(Ft/s)
Travel time  =    4.25 min.
Time of concentration =   14.42 min.

Sub-Channel No. 1 Critical depth =      0.250(Ft.)
  '     '       '     Critical flow top width =     25.000(Ft.)
  '     '       '     Critical flow velocity=    2.009(Ft/s)
  '     '       '     Critical flow area =      3.125(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.852(In/Hr) for a    10.0 year storm
Subarea runoff =      5.498(CFS) for      3.340(Ac.)
Total runoff =      8.991(CFS)   Total area =       5.100(Ac.)
Depth of flow =   0.293(Ft.), Average velocity =   2.089(Ft/s)

Sub-Channel No. 1 Critical depth =      0.289(Ft.)
  '     '       '     Critical flow top width =     28.906(Ft.)
  '     '       '     Critical flow velocity=    2.152(Ft/s)
  '     '       '     Critical flow area =      4.178(Sq.Ft)

End of computations, total study area =            5.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 02/21/18  File:27259RATE.out
------------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
Area E - RAT - Q100 (onsite)  PROPOSED

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      501.100
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   710.000(Ft.)
Top (of initial area) elevation =  1494.000(Ft.)
Bottom (of initial area) elevation =  1486.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.01127  s(percent)=       1.13
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.169 min.
Rainfall intensity =      3.331(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      5.237(CFS)
Total initial stream area =        1.760(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.100 to Point/Station      501.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1486.000(Ft.)
Downstream point elevation =  1483.200(Ft.)
Channel length thru subarea  =   487.000(Ft.)
Channel base width  =    0.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =      9.451(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =      9.451(CFS)
Depth of flow =   0.299(Ft.), Average velocity =   2.115(Ft/s)
Channel flow top width =   29.892(Ft.)
Flow Velocity =    2.12(Ft/s)
Travel time  =    3.84 min.
Time of concentration =   14.01 min.

Sub-Channel No. 1 Critical depth =      0.295(Ft.)
  '     '       '     Critical flow top width =     29.492(Ft.)
  '     '       '     Critical flow velocity=    2.173(Ft/s)
  '     '       '     Critical flow area =      4.349(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.892
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.811(In/Hr) for a   100.0 year storm
Subarea runoff =      8.376(CFS) for      3.340(Ac.)
Total runoff =     13.613(CFS)   Total area =       5.100(Ac.)
Depth of flow =   0.343(Ft.), Average velocity =   2.317(Ft/s)

Sub-Channel No. 1 Critical depth =      0.340(Ft.)
  '     '       '     Critical flow top width =     33.984(Ft.)
  '     '       '     Critical flow velocity=    2.357(Ft/s)
  '     '       '     Critical flow area =      5.775(Sq.Ft)

End of computations, total study area =            5.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area F- Areas, Length of Concentration, Nodes

Area F
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
F1		3.70	1000	552	601	1486.00	603.00	1477.17	8.83
F2		2.24	793	328	602	1485.00	603.00	1477.17	7.83
	total	5.94							

Run-off Index			Commercial	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	67

Imperviousness- COMMERCIAL = 0.9

```
              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/17/18  File:27259RATF10.out
------------------------------------------------------------------------
  PM #13523
 MILL CREEK PROMENADE
 Area F - RAT - Q10 (onsite)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      603.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  1486.000(Ft.)
Bottom (of initial area) elevation =  1477.170(Ft.)
Difference in elevation =     8.830(Ft.)
Slope =    0.00883  s(percent)=       0.88
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.244 min.
Rainfall intensity =      2.020(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.563(CFS)
```

```
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      603.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.700(Ac.)
Runoff from this stream =      6.563(CFS)
Time of concentration =   12.24 min.
Rainfall intensity =     2.020(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        6.563     12.24                 2.020
Largest stream flow has longer time of concentration
Qp =      6.563 + sum of
Qp =      6.563

Total of 1 streams to confluence:
Flow rates before confluence point:
       6.563
Area of streams before confluence:
        3.700
Results of confluence:
Total flow rate =      6.563(CFS)
Time of concentration =    12.244 min.
Effective stream area after confluence =      3.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      602.000 to Point/Station      603.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   793.000(Ft.)
Top (of initial area) elevation =  1485.000(Ft.)
Bottom (of initial area) elevation =  1477.170(Ft.)
Difference in elevation =     7.830(Ft.)
Slope =    0.00987  s(percent)=       0.99
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.913 min.
Rainfall intensity =      2.147(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.228(CFS)
Total initial stream area =        2.240(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      602.000 to Point/Station      603.000
**** CONFLUENCE OF MINOR STREAMS ****
```

```
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.240(Ac.)
Runoff from this stream =      4.228(CFS)
Time of concentration =   10.91 min.
Rainfall intensity =     2.147(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        6.563     12.24                 2.020
2        4.228     10.91                 2.147
Largest stream flow has longer time of concentration
Qp =      6.563 + sum of
         Qb         Ia/Ib
          4.228 *    0.941 =      3.978
Qp =     10.540

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.563       4.228
Area of streams before confluence:
        3.700        2.240
Results of confluence:
Total flow rate =     10.540(CFS)
Time of concentration =    12.244 min.
Effective stream area after confluence =      5.940(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.100 to Point/Station      603.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1475.200(Ft.)
Downstream point/station elevation =  1474.800(Ft.)
Pipe length  =    83.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.540(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    10.540(CFS)
Normal flow depth in pipe =   16.48(In.)
Flow top width inside pipe =   17.27(In.)
Critical Depth =   14.52(In.)
Pipe flow velocity =      5.21(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =    12.51 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.200 to Point/Station      603.300
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1471.660(Ft.)
Downstream point/station elevation =  1470.610(Ft.)
Pipe length  =   210.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.540(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    10.540(CFS)
Normal flow depth in pipe =   16.20(In.)
Flow top width inside pipe =   17.64(In.)
Critical Depth =   14.52(In.)
Pipe flow velocity =      5.30(Ft/s)
```

```
Travel time through pipe =    0.66 min.
Time of concentration (TC) =    13.17 min.
End of computations, total study area =            5.94 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

```
              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/17/18  File:27259RATF100.out
------------------------------------------------------------------------
   PM #13523
 MILL CREEK PROMENADE
 Area F - RAT - Q100 (onsite)
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file
------------------------------------------------------------------------
Program License Serial Number 4066
------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      603.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  1486.000(Ft.)
Bottom (of initial area) elevation =  1477.170(Ft.)
Difference in elevation =     8.830(Ft.)
Slope =    0.00883  s(percent)=       0.88
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.244 min.
Rainfall intensity =      3.018(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      9.969(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      603.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.700(Ac.)
Runoff from this stream =      9.969(CFS)
Time of concentration =   12.24 min.
Rainfall intensity =     3.018(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        9.969     12.24                 3.018
Largest stream flow has longer time of concentration
Qp =      9.969 + sum of
Qp =      9.969

Total of 1 streams to confluence:
Flow rates before confluence point:
       9.969
Area of streams before confluence:
        3.700
Results of confluence:
Total flow rate =      9.969(CFS)
Time of concentration =    12.244 min.
Effective stream area after confluence =      3.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      602.000 to Point/Station      603.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   793.000(Ft.)
Top (of initial area) elevation =  1485.000(Ft.)
Bottom (of initial area) elevation =  1477.170(Ft.)
Difference in elevation =     7.830(Ft.)
Slope =    0.00987  s(percent)=       0.99
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.913 min.
Rainfall intensity =      3.208(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.418(CFS)
Total initial stream area =        2.240(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      602.000 to Point/Station      603.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.240(Ac.)
Runoff from this stream =      6.418(CFS)
```

```
Time of concentration =   10.91 min.
Rainfall intensity =     3.208(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)

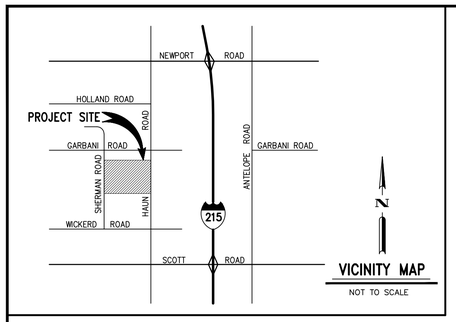

1        9.969     12.24                 3.018
2        6.418     10.91                 3.208
Largest stream flow has longer time of concentration
Qp =      9.969 + sum of
         Qb         Ia/Ib
          6.418 *    0.941 =      6.038
Qp =     16.008

Total of 2 streams to confluence:
Flow rates before confluence point:
       9.969       6.418
Area of streams before confluence:
        3.700        2.240
Results of confluence:
Total flow rate =     16.008(CFS)
Time of concentration =    12.244 min.
Effective stream area after confluence =      5.940(Ac.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.100 to Point/Station      603.200
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1475.200(Ft.)
Downstream point/station elevation =  1474.800(Ft.)
Pipe length  =    83.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.008(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    16.008(CFS)
Normal flow depth in pipe =   20.11(In.)
Flow top width inside pipe =   17.69(In.)
Critical Depth =   17.31(In.)
Pipe flow velocity =      5.69(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =    12.49 min.
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.200 to Point/Station      603.300
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1471.660(Ft.)
Downstream point/station elevation =  1470.610(Ft.)
Pipe length  =   210.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.008(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    16.008(CFS)
Normal flow depth in pipe =   19.69(In.)
Flow top width inside pipe =   18.43(In.)
Critical Depth =   17.31(In.)
Pipe flow velocity =      5.80(Ft/s)
Travel time through pipe =    0.60 min.
Time of concentration (TC) =    13.09 min.
End of computations, total study area =            5.94 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

APPENDIX B.4 – Rational Method
4. Off-site Ultimate Built-out 10yr & 100yr

OFFSITE AREAS ULTIMATE BUILT-OUT DRAINAGE MAP



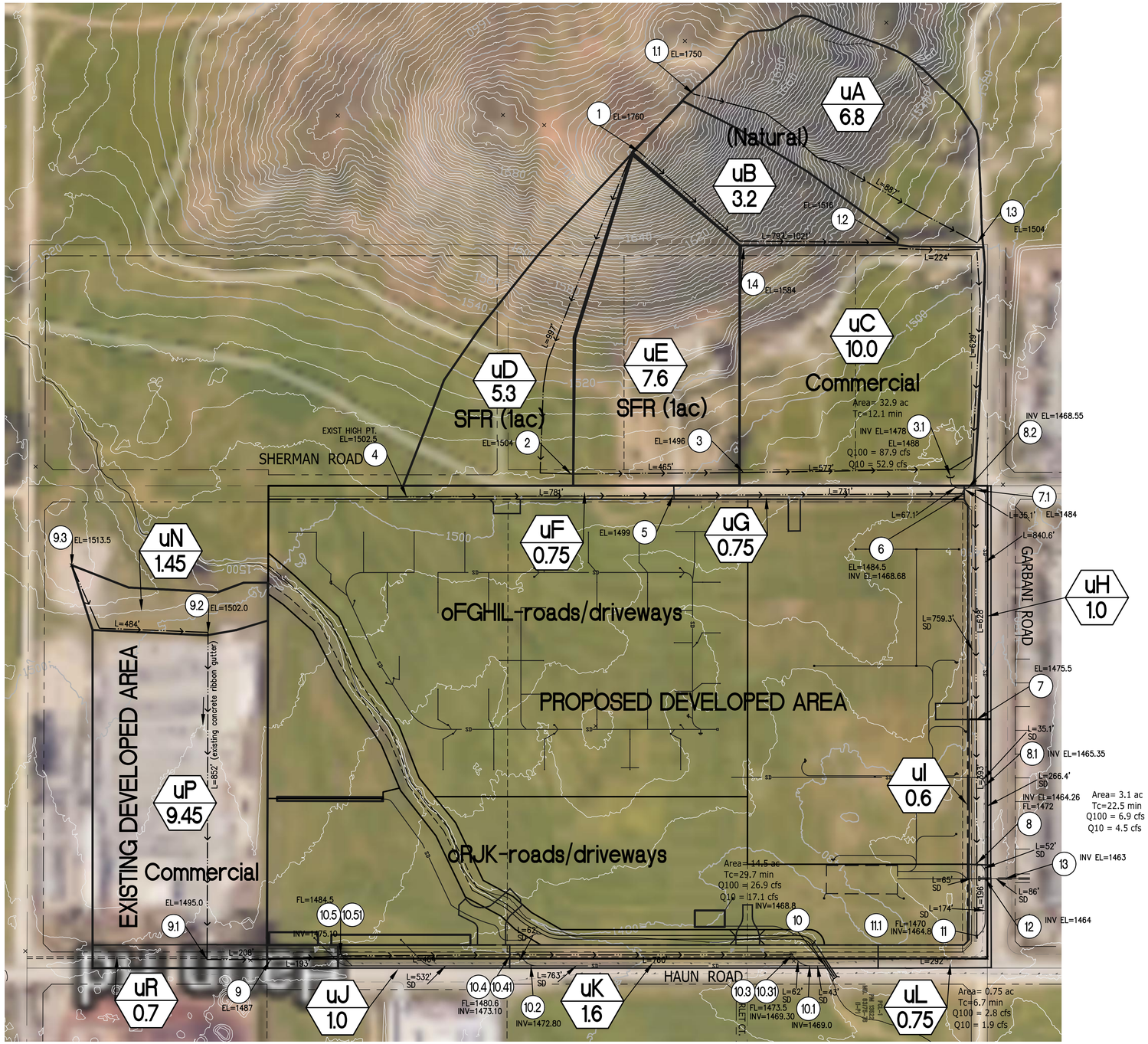
DRAINAGE LEGEND

SYMBOL	DEFINITION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	EXISTING DRAINAGE BOUNDARY
	DIRECTION OF EXISTING FLOW
Q100 = X.X cfs	100 YEAR STORM FLOW FOR AREA (RATIONAL METHOD)
L=762'	LENGTH OF TRAVEL
(3) EL=1431	NODE WITH ELEVATION
uA	AREA NAME (ULTIMATE-OFFSITE)
0.78	AREA ACRES

100 YR			
AREA DESIGNATION	AREA AC.	NODE	Q100 (CFS)
uABCDE	32.90	3.1	87.90
uFGHJ	3.10	8	6.90
uNPRKJ	14.50	10	26.90
uL	0.75	11	2.80
TOTAL	50.32		124.50

10 YR			
AREA DESIGNATION	AREA AC.	NODE	Q100 (CFS)
uABCDE	20.15	3.1	52.90
uFGHJ	1.00	8	4.50
uNPRKJ	16.60	10	17.10
uL	1.20	11	1.90
TOTAL	50.32		76.40

GRAPHIC SCALE
150 0 75 150 300 450
1 inch = 150 ft.



Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

REVISIONS				
SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:
CHRIS D. HOPPER
RCE NO. 34821
DATE
Benjie

SEAL: REGISTERED PROFESSIONAL ENGINEER CHRIS D. HOPPER No. 34821 Exp. 9/30/17 CIVIL STATE OF CALIFORNIA

SCALE:	1" =150'
DESIGN:	BAM/REK
DRAWN:	BENJIE/RGS
CHECKED:	HJK/BAM
APPROVED:	HJK/TPV
DATE:	MARCH, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH
DIRECTOR OF PUBLIC WORKS/
CITY ENGINEER
RCE 61253
EXP. 6/30/16
DATE

RECOMMENDED BY:
DATE

CITY OF MENIFEE

OFFSITE DRAINAGE MAP
MILLCREEK PROMENADE
RATIONAL METHOD 10YR, 100YR

SHEET NO.
1 OF 1

PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\PROPOSED\RAT\OFFSITE\27259-PROPOSED_RAT_OFFSITE AREAS-ult-ULTIMATE.dwg 2-26-18 04:17:01 PM

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/17/18
File:27259RATOFFuAE10.out
------------------------------------------------------------------------
 PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oABCDE - Q10 (ultimate built-out)

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   887.000(Ft.)
Top (of initial area) elevation =  1750.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   246.000(Ft.)
Slope =    0.27734  s(percent)=      27.73
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.348 min.
Rainfall intensity =      2.208(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
```

```
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     11.934(CFS)
Total initial stream area =        6.800(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.800(Ac.)
Runoff from this stream =     11.934(CFS)
Time of concentration =   10.35 min.
Rainfall intensity =     2.208(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.934     10.35           2.208
Largest stream flow has longer time of concentration
Qp =     11.934 + sum of
Qp =     11.934

Total of 1 main streams to confluence:
Flow rates before confluence point:
      11.934
Area of streams before confluence:
        6.800


Results of confluence:
Total flow rate =     11.934(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =      6.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        1.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   797.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =    15.160(Ft.)
Difference in elevation =  1744.840(Ft.)
Slope =    2.18926  s(percent)=     218.93
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.558 min.
Rainfall intensity =      2.812(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.815
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      7.335(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.200 to Point/Station        1.300
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1516.000(Ft.)
End of natural channel elevation =   1504.000(Ft.)
Length of natural channel  =   224.000(Ft.)
Estimated mean flow rate at midpoint of channel =      7.335(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
 Velocity = 5.48(q^.33)(slope^.492)
Velocity using mean channel flow =   2.51(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0536
Corrected/adjusted channel slope =  0.0536
Travel time =    1.49 min.     TC =    8.05  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.806
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  82.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.523(In/Hr) for a    10.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      7.335(CFS)   Total area =       3.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.200 to Point/Station        1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      7.335(CFS)
Time of concentration =    8.05 min.
Rainfall intensity =     2.523(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.934     10.35            2.208
2        7.335      8.05            2.523
Largest stream flow has longer time of concentration
Qp =     11.934 + sum of
         Qb         Ia/Ib
          7.335 *    0.875 =      6.421
Qp =     18.354

Total of 2 main streams to confluence:
Flow rates before confluence point:
```

```
      11.934       7.335
Area of streams before confluence:
        6.800        3.200


Results of confluence:
Total flow rate =     18.354(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =     10.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1504.000(Ft.)
End of natural channel elevation =   1488.000(Ft.)
Length of natural channel  =   629.000(Ft.)
Estimated mean flow rate at midpoint of channel =     27.531(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.22(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =    2.01 min.     TC =   12.36  min.


 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.010(In/Hr) for a    10.0 year storm
Subarea runoff =     17.576(CFS) for     10.000(Ac.)
Total runoff =     35.930(CFS)   Total area =      20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     20.000(Ac.)
Runoff from this stream =     35.930(CFS)
Time of concentration =   12.36 min.
Rainfall intensity =     2.010(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1       35.930     12.36            2.010
```

```
Largest stream flow has longer time of concentration
Qp =     35.930 + sum of
Qp =     35.930

Total of 1 main streams to confluence:
Flow rates before confluence point:
      35.930
Area of streams before confluence:
       20.000


Results of confluence:
Total flow rate =     35.930(CFS)
Time of concentration =    12.358 min.
Effective stream area after confluence  =     20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   997.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   256.000(Ft.)
Slope =    0.25677  s(percent)=      25.68
TC = k(0.480)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.973 min.
Rainfall intensity =      2.252(In/Hr) for a    10.0 year storm
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.711
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.800; Impervious fraction =  0.200
Initial subarea runoff =      8.489(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.800


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.300(Ac.)
Runoff from this stream =      8.489(CFS)
Time of concentration =    9.97 min.
Rainfall intensity =     2.252(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.489      9.97                 2.252
Largest stream flow has longer time of concentration
Qp =      8.489 + sum of
Qp =      8.489

Total of 1 streams to confluence:
```

```
Flow rates before confluence point:
       8.489
Area of streams before confluence:
        5.300
Results of confluence:
Total flow rate =      8.489(CFS)
Time of concentration =     9.973 min.
Effective stream area after confluence =      5.300(Ac.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        2.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     13.993(CFS)
Depth of flow =   0.816(Ft.), Average velocity =   4.205(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     13.993(CFS)
  '     '     flow top width =      8.158(Ft.)
  '     '    velocity=    4.205(Ft/s)
  '     '     area =      3.328(Sq.Ft)
  '     '     Froude number =     1.160

Upstream point elevation =  1504.000(Ft.)
Downstream point elevation =  1496.000(Ft.)
Flow length =   465.000(Ft.)
Travel time  =    1.84 min.
Time of concentration =   11.82 min.
Depth of flow =   0.816(Ft.)
Average velocity =   4.205(Ft/s)
Total irregular channel flow =    13.993(CFS)
Irregular channel normal depth above invert elev. =   0.816(Ft.)
Average velocity of channel(s) =   4.205(Ft/s)
 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.698
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      2.058(In/Hr) for a    10.0 year storm
Subarea runoff =     10.927(CFS) for      7.600(Ac.)
Total runoff =     19.417(CFS)   Total area =      12.900(Ac.)
Depth of flow =   0.922(Ft.), Average velocity =   4.564(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   0.961(Ft.), Average velocity =   4.209(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
```

```
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     19.417(CFS)
  '     '     flow top width =      9.605(Ft.)
  '     '    velocity=    4.209(Ft/s)
  '     '     area =      4.613(Sq.Ft)
  '     '     Froude number =     1.070

Upstream point elevation =  1496.000(Ft.)
Downstream point elevation =  1488.000(Ft.)
Flow length =   577.000(Ft.)
Travel time  =    2.28 min.
Time of concentration =   14.10 min.
Depth of flow =   0.961(Ft.)
Average velocity =   4.209(Ft/s)
Total irregular channel flow =    19.417(CFS)
Irregular channel normal depth above invert elev. =   0.961(Ft.)
Average velocity of channel(s) =   4.209(Ft/s)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     12.900(Ac.)
Runoff from this stream =     19.417(CFS)
Time of concentration =   14.10 min.
Rainfall intensity =     1.874(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       35.930     12.36           2.010
2       19.417     14.10           1.874
Largest stream flow has longer or shorter time of concentration
Qp =     35.930 + sum of
         Qa          Tb/Ta
         19.417 *    0.876 =     17.017
Qp =     52.947

Total of 2 main streams to confluence:
Flow rates before confluence point:
      35.930      19.417
Area of streams before confluence:
       20.000       12.900


Results of confluence:
Total flow rate =     52.947(CFS)
Time of concentration =    12.358 min.
Effective stream area after confluence  =     32.900(Ac.)
End of computations, total study area =           32.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.648
Area averaged RI index number =  68.4
```

```
             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/17/18  File:27259RATOFFuAE.out
------------------------------------------------------------------------
 PM #13523
MILL CREEK PROMENADE
EXISTING OFFSITE AREA oABCDE - Q100 (ultimate built-out)

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.300
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   887.000(Ft.)
Top (of initial area) elevation =  1750.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   246.000(Ft.)
Slope =    0.27734  s(percent)=      27.73
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.348 min.
Rainfall intensity =      3.300(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     19.528(CFS)
Total initial stream area =        6.800(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.100 to Point/Station       1.300
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.800(Ac.)
Runoff from this stream =     19.528(CFS)
Time of concentration =   10.35 min.
Rainfall intensity =     3.300(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       19.528     10.35            3.300
Largest stream flow has longer time of concentration
Qp =     19.528 + sum of
Qp =     19.528

Total of 1 main streams to confluence:
Flow rates before confluence point:
      19.528
Area of streams before confluence:
        6.800


Results of confluence:
Total flow rate =     19.528(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =      6.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.000 to Point/Station       1.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   797.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =    15.160(Ft.)
Difference in elevation =  1744.840(Ft.)
Slope =    2.18926  s(percent)=     218.93
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.558 min.
Rainfall intensity =      4.202(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     11.785(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       1.200 to Point/Station       1.300
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
```

```
____________________________________________________________________
Top of natural channel elevation =   1516.000(Ft.)
End of natural channel elevation =   1504.000(Ft.)
Length of natural channel  =   224.000(Ft.)
Estimated mean flow rate at midpoint of channel =     11.785(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
 Velocity = 5.48(q^.33)(slope^.492)
Velocity using mean channel flow =   2.93(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0536
Corrected/adjusted channel slope =  0.0536
Travel time =    1.27 min.     TC =    7.83  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  92.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      3.825(In/Hr) for a   100.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =     11.785(CFS)   Total area =       3.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.200 to Point/Station        1.300
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =     11.785(CFS)
Time of concentration =    7.83 min.
Rainfall intensity =     3.825(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       19.528     10.35            3.300
2       11.785      7.83            3.825
Largest stream flow has longer time of concentration
Qp =     19.528 + sum of
         Qb         Ia/Ib
         11.785 *    0.863 =     10.168
Qp =     29.696

Total of 2 main streams to confluence:
Flow rates before confluence point:
      19.528      11.785
Area of streams before confluence:
        6.800        3.200
```

```
Results of confluence:
Total flow rate =     29.696(CFS)
Time of concentration =    10.348 min.
Effective stream area after confluence  =     10.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of natural channel elevation =   1504.000(Ft.)
End of natural channel elevation =   1488.000(Ft.)
Length of natural channel  =   629.000(Ft.)
Estimated mean flow rate at midpoint of channel =     44.544(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.97(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =    1.76 min.     TC =   12.10  min.


 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.891
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  80.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      3.037(In/Hr) for a   100.0 year storm
Subarea runoff =     27.061(CFS) for     10.000(Ac.)
Total runoff =     56.757(CFS)    Total area =      20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.300 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     20.000(Ac.)
Runoff from this stream =     56.757(CFS)
Time of concentration =   12.10 min.
Rainfall intensity =     3.037(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       56.757     12.10            3.037
Largest stream flow has longer time of concentration
Qp =     56.757 + sum of
Qp =     56.757

Total of 1 main streams to confluence:
```

```
Flow rates before confluence point:
      56.757
Area of streams before confluence:
       20.000


Results of confluence:
Total flow rate =     56.757(CFS)
Time of concentration =    12.103 min.
Effective stream area after confluence  =     20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   997.000(Ft.)
Top (of initial area) elevation =  1760.000(Ft.)
Bottom (of initial area) elevation =  1504.000(Ft.)
Difference in elevation =   256.000(Ft.)
Slope =    0.25677  s(percent)=      25.68
TC = k(0.480)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.973 min.
Rainfall intensity =      3.365(In/Hr) for a   100.0 year storm
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.835
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  80.00
Pervious area fraction =  0.800; Impervious fraction =  0.200
Initial subarea runoff =     14.894(CFS)
Total initial stream area =        5.300(Ac.)
Pervious area fraction = 0.800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Process from Point/Station        1.000 to Point/Station        2.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.300(Ac.)
Runoff from this stream =     14.894(CFS)
Time of concentration =    9.97 min.
Rainfall intensity =     3.365(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.894      9.97                 3.365
Largest stream flow has longer time of concentration
Qp =     14.894 + sum of
Qp =     14.894

Total of 1 streams to confluence:
Flow rates before confluence point:
      14.894
Area of streams before confluence:
        5.300
Results of confluence:
```

```
Total flow rate =     14.894(CFS)
Time of concentration =     9.973 min.
Effective stream area after confluence =      5.300(Ac.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        2.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     24.738(CFS)
Depth of flow =   1.008(Ft.), Average velocity =   4.868(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
Manning's 'N' friction factor =   0.025
----------------------------------------------------------------
Sub-Channel flow  =     24.738(CFS)
  '     '      flow top width =     10.000(Ft.)
  '     '    velocity=    4.868(Ft/s)
  '     '      area =      5.082(Sq.Ft)
  '     '      Froude number =     1.204

Upstream point elevation =  1504.000(Ft.)
Downstream point elevation =  1496.000(Ft.)
Flow length =   465.000(Ft.)
Travel time  =    1.59 min.
Time of concentration =   11.56 min.
Depth of flow =   1.008(Ft.)
Average velocity =   4.868(Ft/s)
Total irregular channel flow =    24.738(CFS)
Irregular channel normal depth above invert elev. =   1.008(Ft.)
Average velocity of channel(s) =   4.868(Ft/s)
!!Warning: Water is above left or right bank elevations
 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.830
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  80.00
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      3.111(In/Hr) for a   100.0 year storm
Subarea runoff =     19.632(CFS) for      7.600(Ac.)
Total runoff =     34.526(CFS)   Total area =      12.900(Ac.)
Depth of flow =   1.121(Ft.), Average velocity =   5.563(Ft/s)
!!Warning: Water is above left or right bank elevations
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.100
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Depth of flow =   1.162(Ft.), Average velocity =   5.214(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2              2.00              0.00
       3             10.00              1.00
```

```
Manning's 'N' friction factor =   0.025
-----------------------------------------------------------------
Sub-Channel flow  =     34.526(CFS)
  '     '      flow top width =     10.000(Ft.)
  '     '    velocity=    5.214(Ft/s)
  '     '      area =      6.622(Sq.Ft)
  '     '      Froude number =     1.129

Upstream point elevation =  1496.000(Ft.)
Downstream point elevation =  1488.000(Ft.)
Flow length =   577.000(Ft.)
Travel time  =    1.84 min.
Time of concentration =   13.41 min.
Depth of flow =   1.162(Ft.)
Average velocity =   5.214(Ft/s)
Total irregular channel flow =    34.526(CFS)
Irregular channel normal depth above invert elev. =   1.162(Ft.)
Average velocity of channel(s) =   5.214(Ft/s)
!!Warning: Water is above left or right bank elevations


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Process from Point/Station        3.000 to Point/Station        3.100
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     12.900(Ac.)
Runoff from this stream =     34.526(CFS)
Time of concentration =   13.41 min.
Rainfall intensity =     2.876(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       56.757     12.10            3.037
2       34.526     13.41            2.876
Largest stream flow has longer or shorter time of concentration
Qp =     56.757 + sum of
         Qa          Tb/Ta
         34.526 *    0.903 =     31.164
Qp =     87.921

Total of 2 main streams to confluence:
Flow rates before confluence point:
      56.757      34.526
Area of streams before confluence:
       20.000       12.900


Results of confluence:
Total flow rate =     87.921(CFS)
Time of concentration =    12.103 min.
Effective stream area after confluence  =     32.900(Ac.)
End of computations, total study area =           32.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.648
Area averaged RI index number =  68.4
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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/16/18  File:27259osFGHJ.out
------------------------------------------------------------------------
 Street Flow Capacity AND Catch Basin Capacity - Sherman & Garbani ROAD
 Mill Creek Promenade
 by Pacific Coast Land Consultants, Inc.

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   781.000(Ft.)
Top (of initial area) elevation =  1502.500(Ft.)
Bottom (of initial area) elevation =  1499.000(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00448  s(percent)=       0.45
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.703 min.
Rainfall intensity =      1.981(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      1.304(CFS)
Total initial stream area =        0.750(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station        5.000 to Point/Station        6.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1499.000(Ft.)
End of street segment elevation =  1484.500(Ft.)
Length of street segment  =   731.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  15.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =      1.304(CFS)
Half street flow before street inlet =      1.304(CFS)
Existing pipe flow before street inlet =      0.000(CFS)
Number of street inlets = 1
Depth of flow =   0.300(Ft.), Average velocity =   3.624(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =      4.000(Ft.)
 Flow rate in gutter section of street = Qw =      1.304(CFS)
 Ratio of frontal flow to total flow = E0 =  1.0000
 Given curb inlet length  L =      4.000(Ft.)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.1333 right of way
            15.0000             0.8333 top of curb
            15.0000             0.0000 flow line
            19.0000             0.5000 gutter/depression end
            19.0000             0.5000 grade break
            37.0000             0.8600 crown
 Length required for total flow interception = Lt
 Lt = .6 * Q^0.42 * Slope^.3 * (1/(n*Se)^.6 =     10.037(Ft.)
 where Manning's n = 0.0150 and Slope = street slope =  0.0198
 Se = Equivalent Street x-slope including depression =  0.1033
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  0.5995

Pipe calculations for under street flow rate of      0.782(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1499.000(Ft.)
Downstream point/station elevation =  1484.500(Ft.)
Pipe length  =   731.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.782(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.782(CFS)
Normal flow depth in pipe =    5.38(In.)
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```
Flow top width inside pipe =    8.83(In.)
Critical Depth =    4.84(In.)
Pipe flow velocity =      2.84(Ft/s)
Travel time through pipe =    4.30 min.
Time of concentration (TC) =    17.00 min.
Maximum flow rate of street inlet(s) =      0.782(CFS)
Maximum pipe flow capacity =      0.782(CFS)
Remaining flow in street below inlet =      0.522(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.698(In/Hr) for a    10.0 year storm
Subarea runoff =      1.114(CFS) for      0.750(Ac.)
Total runoff =      2.418(CFS)   Total area =       1.500(Ac.)
Street flow at end of street =      1.636(CFS)
Half street flow at end of street =      1.636(CFS)
Depth of flow =   0.266(Ft.), Average velocity =   2.685(Ft/s)
Flow width (from curb towards crown)=   6.949(Ft.)


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Process from Point/Station        7.100 to Point/Station        7.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1484.000(Ft.)
End of street segment elevation =  1475.500(Ft.)
Length of street segment  =   628.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point

Pipe calculations for under street flow rate of      0.782(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1484.000(Ft.)
Downstream point/station elevation =  1475.500(Ft.)
Pipe length  =   628.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.782(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.782(CFS)
Normal flow depth in pipe =    5.38(In.)
Flow top width inside pipe =    8.83(In.)
Critical Depth =    4.84(In.)
Pipe flow velocity =      2.84(Ft/s)
Travel time through pipe =    3.69 min.
Time of concentration (TC) =    20.69 min.
Maximum flow rate of street inlet(s) =      0.000(CFS)
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Maximum pipe flow capacity =      0.782(CFS)
Remaining flow in street below inlet =      1.636(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.530(In/Hr) for a    10.0 year storm
Subarea runoff =      1.336(CFS) for      1.000(Ac.)
Total runoff =      3.754(CFS)   Total area =       2.500(Ac.)
Street flow at end of street =      2.972(CFS)
Half street flow at end of street =      2.972(CFS)
Depth of flow =   0.327(Ft.), Average velocity =   2.632(Ft/s)
Flow width (from curb towards crown)=  10.013(Ft.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        8.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1475.500(Ft.)
End of street segment elevation =  1472.000(Ft.)
Length of street segment  =   393.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point

Pipe calculations for under street flow rate of      0.782(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1475.500(Ft.)
Downstream point/station elevation =  1472.000(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.782(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.782(CFS)
Normal flow depth in pipe =    5.38(In.)
Flow top width inside pipe =    8.83(In.)
Critical Depth =    4.84(In.)
Pipe flow velocity =      2.84(Ft/s)
Travel time through pipe =    2.31 min.
Time of concentration (TC) =    23.00 min.
Maximum flow rate of street inlet(s) =      0.000(CFS)
Maximum pipe flow capacity =      0.782(CFS)
Remaining flow in street below inlet =      2.972(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
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```
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.446(In/Hr) for a    10.0 year storm
Subarea runoff =      0.757(CFS) for      0.600(Ac.)
Total runoff =      4.511(CFS)    Total area =       3.100(Ac.)
Street flow at end of street =      3.729(CFS)
Half street flow at end of street =      3.729(CFS)
Depth of flow =   0.368(Ft.), Average velocity =   2.362(Ft/s)
Flow width (from curb towards crown)=  12.049(Ft.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        8.200
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1472.000(Ft.)
End of street segment elevation =  1471.900(Ft.)
Length of street segment  =    20.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =      3.729(CFS)
Half street flow before street inlet =      3.729(CFS)
Existing pipe flow before street inlet =      0.782(CFS)
Number of street inlets = 1
Depth of flow =   0.608(Ft.), Average velocity =   2.164(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =      9.399(Ft.)
 Flow rate in gutter section of street = Qw =      3.506(CFS)
 Ratio of frontal flow to total flow = E0 =  0.9402
 Given curb inlet length  L =      8.000(Ft.)
Street slope is less than .5% , depth of flow indicates a weir flow
condition exists for an opening height of    8.00(In.)
Using equation Qweir = 2.3(1.25 for SI) (L + 1.8W)d^1.5)
Total inlet flow capacity=     16.573(CFS)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.4200 right of way
            21.0000             1.0000 top of curb
            21.0000             0.0000 flow line
            25.0000             0.5000 gutter/depression end
            25.0000             0.5000 grade break
            59.0000             1.1800 crown
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  1.0000
Note: Single inlet capacity is greater than 1/2 street flow

Pipe calculations for under street flow rate of      4.511(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1472.000(Ft.)
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Downstream point/station elevation =  1471.900(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.511(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.511(CFS)
Normal flow depth in pipe =   12.14(In.)
Flow top width inside pipe =   11.78(In.)
Critical Depth =   10.32(In.)
Pipe flow velocity =      4.24(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    23.08 min.
Maximum flow rate of street inlet(s) =      3.729(CFS)
Maximum pipe flow capacity =      4.511(CFS)
Remaining flow in street below inlet =      0.000(CFS)
Sump condition with all flow intercepted by street inlet
Insignificant sub-area being added to street
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.444(In/Hr) for a    10.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      4.511(CFS)   Total area =       3.100(Ac.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        8.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      4.511(CFS)
Time of concentration =   23.08 min.
Rainfall intensity =     1.444(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.511     23.08                 1.444
Largest stream flow has longer time of concentration
Qp =      4.511 + sum of
Qp =      4.511

Total of 1 streams to confluence:
Flow rates before confluence point:
       4.511
Area of streams before confluence:
        3.100
Results of confluence:
Total flow rate =      4.511(CFS)
Time of concentration =    23.078 min.
Effective stream area after confluence =      3.100(Ac.)
End of computations, total study area =            3.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/16/18  File:27259osFGHJ.out
------------------------------------------------------------------------
  Street Flow Capacity AND Catch Basin Capacity - Sherman & Garbani ROAD
 Mill Creek Promenade
 by Pacific Coast Land Consultants, Inc.
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   781.000(Ft.)
Top (of initial area) elevation =  1502.500(Ft.)
Bottom (of initial area) elevation =  1499.000(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00448  s(percent)=       0.45
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.703 min.
Rainfall intensity =      2.960(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.982(CFS)
Total initial stream area =        0.750(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station        5.000 to Point/Station        6.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
_____________________________________________________________________
Top of street segment elevation =  1499.000(Ft.)
End of street segment elevation =  1484.500(Ft.)
Length of street segment  =   731.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  15.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =      1.982(CFS)
Half street flow before street inlet =      1.982(CFS)
Existing pipe flow before street inlet =      0.000(CFS)
Number of street inlets = 1
Depth of flow =   0.351(Ft.), Average velocity =   4.024(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =      4.000(Ft.)
 Flow rate in gutter section of street = Qw =      1.982(CFS)
 Ratio of frontal flow to total flow = E0 =  1.0000
 Given curb inlet length  L =      4.000(Ft.)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.1333 right of way
            15.0000             0.8333 top of curb
            15.0000             0.0000 flow line
            19.0000             0.5000 gutter/depression end
            19.0000             0.5000 grade break
            37.0000             0.8600 crown
 Length required for total flow interception = Lt
 Lt = .6 * Q^0.42 * Slope^.3 * (1/(n*Se)^.6 =     11.965(Ft.)
 where Manning's n = 0.0150 and Slope = street slope =  0.0198
 Se = Equivalent Street x-slope including depression =  0.1033
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  0.5193

Pipe calculations for under street flow rate of      1.029(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1499.000(Ft.)
Downstream point/station elevation =  1484.500(Ft.)
Pipe length  =   731.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.029(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.029(CFS)
Normal flow depth in pipe =    6.55(In.)
Flow top width inside pipe =    8.01(In.)
Critical Depth =    5.59(In.)
Pipe flow velocity =      2.99(Ft/s)
Travel time through pipe =    4.08 min.
Time of concentration (TC) =    16.78 min.
Maximum flow rate of street inlet(s) =      1.029(CFS)
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Maximum pipe flow capacity =      1.029(CFS)
Remaining flow in street below inlet =      0.953(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.892
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.554(In/Hr) for a   100.0 year storm
Subarea runoff =      1.708(CFS) for      0.750(Ac.)
Total runoff =      3.689(CFS)   Total area =       1.500(Ac.)
Street flow at end of street =      2.660(CFS)
Half street flow at end of street =      2.660(CFS)
Depth of flow =   0.302(Ft.), Average velocity =   2.977(Ft/s)
Flow width (from curb towards crown)=   8.758(Ft.)


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Process from Point/Station        7.100 to Point/Station        7.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1484.000(Ft.)
End of street segment elevation =  1475.500(Ft.)
Length of street segment  =   628.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point

Pipe calculations for under street flow rate of      1.029(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1484.000(Ft.)
Downstream point/station elevation =  1475.500(Ft.)
Pipe length  =   628.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.029(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.029(CFS)
Normal flow depth in pipe =    6.55(In.)
Flow top width inside pipe =    8.01(In.)
Critical Depth =    5.59(In.)
Pipe flow velocity =      2.99(Ft/s)
Travel time through pipe =    3.50 min.
Time of concentration (TC) =    20.28 min.
Maximum flow rate of street inlet(s) =      0.000(CFS)
Maximum pipe flow capacity =      1.029(CFS)
Remaining flow in street below inlet =      2.660(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.891
Decimal fraction soil group A = 0.000
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Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.310(In/Hr) for a   100.0 year storm
Subarea runoff =      2.057(CFS) for      1.000(Ac.)
Total runoff =      5.746(CFS)   Total area =       2.500(Ac.)
Street flow at end of street =      4.718(CFS)
Half street flow at end of street =      4.718(CFS)
Depth of flow =   0.370(Ft.), Average velocity =   2.930(Ft/s)
Flow width (from curb towards crown)=  12.179(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        8.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1475.500(Ft.)
End of street segment elevation =  1472.000(Ft.)
Length of street segment  =   393.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point

Pipe calculations for under street flow rate of      1.029(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1475.500(Ft.)
Downstream point/station elevation =  1472.000(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.029(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.029(CFS)
Normal flow depth in pipe =    6.55(In.)
Flow top width inside pipe =    8.01(In.)
Critical Depth =    5.59(In.)
Pipe flow velocity =      2.99(Ft/s)
Travel time through pipe =    2.19 min.
Time of concentration (TC) =    22.48 min.
Maximum flow rate of street inlet(s) =      0.000(CFS)
Maximum pipe flow capacity =      1.029(CFS)
Remaining flow in street below inlet =      4.718(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.187(In/Hr) for a   100.0 year storm
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Subarea runoff =      1.168(CFS) for      0.600(Ac.)
Total runoff =      6.915(CFS)   Total area =       3.100(Ac.)
Street flow at end of street =      5.886(CFS)
Half street flow at end of street =      5.886(CFS)
Depth of flow =   0.417(Ft.), Average velocity =   2.634(Ft/s)
Flow width (from curb towards crown)=  14.519(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        8.200
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1472.000(Ft.)
End of street segment elevation =  1471.900(Ft.)
Length of street segment  =    20.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =      5.886(CFS)
Half street flow before street inlet =      5.886(CFS)
Existing pipe flow before street inlet =      1.029(CFS)
Number of street inlets = 1
Depth of flow =   0.684(Ft.), Average velocity =   2.279(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     13.201(Ft.)
 Flow rate in gutter section of street = Qw =      4.932(CFS)
 Ratio of frontal flow to total flow = E0 =  0.8379
 Given curb inlet length  L =      8.000(Ft.)
Street slope is less than .5% , depth of flow indicates an orifice flow
condition exists for an opening height of    8.00(In.)
Using equation Qi = .67hL(2gd0)^.5
Total inlet flow capacity=     16.981(CFS)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.4200 right of way
            21.0000             1.0000 top of curb
            21.0000             0.0000 flow line
            25.0000             0.5000 gutter/depression end
            25.0000             0.5000 grade break
            59.0000             1.1800 crown
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  1.0000
Note: Single inlet capacity is greater than 1/2 street flow

Pipe calculations for under street flow rate of      6.915(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1472.000(Ft.)
Downstream point/station elevation =  1471.900(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
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```
No. of pipes = 1  Required pipe flow  =     6.915(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     6.915(CFS)
Normal flow depth in pipe =   13.76(In.)
Flow top width inside pipe =   15.28(In.)
Critical Depth =   12.22(In.)
Pipe flow velocity =      4.78(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    22.55 min.
Maximum flow rate of street inlet(s) =      5.886(CFS)
Maximum pipe flow capacity =      6.915(CFS)
Remaining flow in street below inlet =      0.000(CFS)
Sump condition with all flow intercepted by street inlet
Insignificant sub-area being added to street
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.184(In/Hr) for a   100.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      6.915(CFS)   Total area =       3.100(Ac.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        8.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.100(Ac.)
Runoff from this stream =      6.915(CFS)
Time of concentration =   22.55 min.
Rainfall intensity =     2.184(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        6.915     22.55                 2.184
Largest stream flow has longer time of concentration
Qp =      6.915 + sum of
Qp =      6.915

Total of 1 streams to confluence:
Flow rates before confluence point:
       6.915
Area of streams before confluence:
        3.100
Results of confluence:
Total flow rate =      6.915(CFS)
Time of concentration =    22.547 min.
Effective stream area after confluence =      3.100(Ac.)
End of computations, total study area =            3.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

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             Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/16/18  File:27259osL.out
------------------------------------------------------------------------
Street Flow Capacity AND Catch Basin Capacity - Garbani ROAD (Area uL)
 Mill Creek Promenade
 by Pacific Coast Land Consultants, Inc.

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

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Program License Serial Number 4066

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station       11.100 to Point/Station       11.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   289.000(Ft.)
Top (of initial area) elevation =  1474.740(Ft.)
Bottom (of initial area) elevation =  1470.000(Ft.)
Difference in elevation =     4.740(Ft.)
Slope =    0.01640  s(percent)=       1.64
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.584 min.
Rainfall intensity =      2.806(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
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```
Initial subarea runoff =      1.859(CFS)
Total initial stream area =        0.750(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station       11.200 to Point/Station       11.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1470.000(Ft.)
End of street segment elevation =  1469.900(Ft.)
Length of street segment  =    20.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =      1.859(CFS)
Half street flow before street inlet =      1.859(CFS)
Existing pipe flow before street inlet =      0.000(CFS)
Number of street inlets = 1
Depth of flow =   0.444(Ft.), Average velocity =   2.362(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =      4.000(Ft.)
 Flow rate in gutter section of street = Qw =      1.859(CFS)
 Ratio of frontal flow to total flow = E0 =  1.0000
 Given curb inlet length  L =      4.000(Ft.)
Street slope is less than .5% , depth of flow indicates a weir flow
condition exists for an opening height of    8.00(In.)
Using equation Qweir = 2.3(1.25 for SI) (L + 1.8W)d^1.5)
Total inlet flow capacity=      7.609(CFS)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.4200 right of way
            21.0000             1.0000 top of curb
            21.0000             0.0000 flow line
            25.0000             0.5000 gutter/depression end
            25.0000             0.5000 grade break
            59.0000             1.1800 crown
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  1.0000
Note: Single inlet capacity is greater than 1/2 street flow

Pipe calculations for under street flow rate of      1.859(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1470.000(Ft.)
Downstream point/station elevation =  1469.900(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.859(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.859(CFS)
```

```
Normal flow depth in pipe =    7.66(In.)
Flow top width inside pipe =   11.53(In.)
Critical Depth =    6.97(In.)
Pipe flow velocity =      3.51(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     6.68 min.
Maximum flow rate of street inlet(s) =      1.859(CFS)
Maximum pipe flow capacity =      1.859(CFS)
Remaining flow in street below inlet =      0.000(CFS)
Sump condition with all flow intercepted by street inlet
Insignificant sub-area being added to street
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.785(In/Hr) for a    10.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      1.859(CFS)   Total area =       0.750(Ac.)
End of computations, total study area =            0.75 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

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               Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/16/18  File:27259osL.out
------------------------------------------------------------------------
 Street Flow Capacity AND Catch Basin Capacity - Garbani ROAD (Area uL)
 Mill Creek Promenade
       by Pacific Coast Land Consultants, Inc.
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file
------------------------------------------------------------------------
Program License Serial Number 4066
------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.100 to Point/Station       11.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   289.000(Ft.)
Top (of initial area) elevation =  1474.740(Ft.)
Bottom (of initial area) elevation =  1470.000(Ft.)
Difference in elevation =     4.740(Ft.)
Slope =    0.01640  s(percent)=       1.64
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.584 min.
Rainfall intensity =      4.193(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.895
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.814(CFS)
Total initial stream area =        0.750(Ac.)
Pervious area fraction = 0.100
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.200 to Point/Station       11.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1470.000(Ft.)
End of street segment elevation =  1469.900(Ft.)
Length of street segment  =    20.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
```

```
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =      2.814(CFS)
Half street flow before street inlet =      2.814(CFS)
Existing pipe flow before street inlet =      0.000(CFS)
Number of street inlets = 1
Depth of flow =   0.551(Ft.), Average velocity =   2.216(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =      6.557(Ft.)
 Flow rate in gutter section of street = Qw =      2.782(CFS)
 Ratio of frontal flow to total flow = E0 =  0.9887
 Given curb inlet length  L =      4.000(Ft.)
Street slope is less than .5% , depth of flow indicates a weir flow
condition exists for an opening height of    8.00(In.)
Using equation Qweir = 2.3(1.25 for SI) (L + 1.8W)d^1.5)
Total inlet flow capacity=     10.540(CFS)

Half street cross section data points at curb inlet:
                X-coordinate (Ft.)   Y-coordinate (Ft.)
              0.0000                1.4200 right of way
             21.0000                1.0000 top of curb
             21.0000                0.0000 flow line
             25.0000                0.5000 gutter/depression end
             25.0000                0.5000 grade break
             59.0000                1.1800 crown
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  1.0000
Note: Single inlet capacity is greater than 1/2 street flow

Pipe calculations for under street flow rate of      2.814(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1470.000(Ft.)
Downstream point/station elevation =  1469.900(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.814(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     2.814(CFS)
Normal flow depth in pipe =    8.51(In.)
Flow top width inside pipe =   14.86(In.)
Critical Depth =    8.07(In.)
Pipe flow velocity =      3.91(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     6.67 min.
Maximum flow rate of street inlet(s) =      2.814(CFS)
Maximum pipe flow capacity =      2.814(CFS)
Remaining flow in street below inlet =      0.000(CFS)
Sump condition with all flow intercepted by street inlet
Insignificant sub-area being added to street
COMMERCIAL subarea type
Runoff Coefficient = 0.895
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      4.165(In/Hr) for a   100.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =      2.814(CFS)       Total area =       0.750(Ac.)
End of computations, total study area =            0.75 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  67.3
```

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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/16/18  File:27259RAToNPRJK.out
------------------------------------------------------------------------------
 Street Flow Capacity AND Catch Basin Capacity - HAUN ROAD
 Mill Creek Promenade
 by Pacific Coast Land Consultants, Inc.
  Q 10yr
------------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.870(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.300 to Point/Station        9.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   484.000(Ft.)
Top (of initial area) elevation =  1513.500(Ft.)
Bottom (of initial area) elevation =  1502.000(Ft.)
Difference in elevation =    11.500(Ft.)
Slope =    0.02376  s(percent)=       2.38
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.784 min.
Rainfall intensity =      1.657(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.732
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  77.75
Pervious area fraction =  1.000; Impervious fraction =  0.000
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Initial subarea runoff =      1.758(CFS)
Total initial stream area =        1.450(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.200 to Point/Station        9.100
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1502.000(Ft.)
Downstream point elevation =  1495.000(Ft.)
Channel length thru subarea  =   852.000(Ft.)
Channel base width  =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =      7.459(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =      7.459(CFS)
Depth of flow =   0.197(Ft.), Average velocity =   1.917(Ft/s)
Channel flow top width =   39.454(Ft.)
Flow Velocity =    1.92(Ft/s)
Travel time  =    7.41 min.
Time of concentration =   25.19 min.

Sub-Channel No. 1 Critical depth =      0.203(Ft.)
  '     '       '     Critical flow top width =     40.625(Ft.)
  '     '       '     Critical flow velocity=    1.808(Ft/s)
  '     '       '     Critical flow area =      4.126(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.378(In/Hr) for a    10.0 year storm
Subarea runoff =     11.345(CFS) for      9.450(Ac.)
Total runoff =     13.103(CFS)   Total area =      10.900(Ac.)
Depth of flow =   0.244(Ft.), Average velocity =   2.207(Ft/s)

Sub-Channel No. 1 Critical depth =      0.254(Ft.)
  '     '       '     Critical flow top width =     50.781(Ft.)
  '     '       '     Critical flow velocity=    2.033(Ft/s)
  '     '       '     Critical flow area =      6.447(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.100 to Point/Station        9.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of street segment elevation =  1495.000(Ft.)
End of street segment elevation =  1487.000(Ft.)
Length of street segment  =   208.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
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```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     13.524(CFS)
Depth of flow =   0.429(Ft.), Average velocity =   5.607(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  15.117(Ft.)
Flow velocity =   5.61(Ft/s)
Travel time =    0.62 min.     TC =   25.81  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.360(In/Hr) for a    10.0 year storm
Subarea runoff =      0.829(CFS) for      0.700(Ac.)
Total runoff =     13.933(CFS)   Total area =      11.600(Ac.)
Street flow at end of street =     13.933(CFS)
Half street flow at end of street =     13.933(CFS)
Depth of flow =   0.433(Ft.), Average velocity =   5.648(Ft/s)
Flow width (from curb towards crown)=  15.298(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station       10.500
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1487.000(Ft.)
End of street segment elevation =  1484.500(Ft.)
Length of street segment  =   193.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =     13.933(CFS)
Half street flow before street inlet =     13.933(CFS)
Existing pipe flow before street inlet =      0.000(CFS)
Number of street inlets = 1
Depth of flow =   0.749(Ft.), Average velocity =   3.930(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     16.448(Ft.)
 Flow rate in gutter section of street = Qw =     10.348(CFS)
 Ratio of frontal flow to total flow = E0 =  0.7427
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```
 Given curb inlet length  L =      4.000(Ft.)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.5000 right of way
            25.0000             1.0000 top of curb
            25.0000             0.0000 flow line
            29.0000             0.5000 gutter/depression end
            29.0000             0.5000 grade break
            63.0000             1.1800 crown
 Length required for total flow interception = Lt
 Lt = .6 * Q^0.42 * Slope^.3 * (1/(n*Se)^.6 =     27.464(Ft.)
 where Manning's n = 0.0150 and Slope = street slope =  0.0130
 Se = Equivalent Street x-slope including depression =  0.0819
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  0.2467

Pipe calculations for under street flow rate of      3.438(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1487.000(Ft.)
Downstream point/station elevation =  1484.500(Ft.)
Pipe length  =   193.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.438(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.438(CFS)
Normal flow depth in pipe =    9.71(In.)
Flow top width inside pipe =   14.33(In.)
Critical Depth =    8.98(In.)
Pipe flow velocity =      4.09(Ft/s)
Travel time through pipe =    0.79 min.
Time of concentration (TC) =    26.60 min.
Maximum flow rate of street inlet(s) =      3.438(CFS)
Maximum pipe flow capacity =      3.438(CFS)
Remaining flow in street below inlet =     10.495(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.339(In/Hr) for a    10.0 year storm
Subarea runoff =      0.350(CFS) for      0.300(Ac.)
Total runoff =     14.282(CFS)   Total area =      11.900(Ac.)
Street flow at end of street =     10.845(CFS)
Half street flow at end of street =     10.845(CFS)
Depth of flow =   0.470(Ft.), Average velocity =   3.519(Ft/s)
Flow width (from curb towards crown)=  17.189(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.500 to Point/Station       10.400
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1484.500(Ft.)
End of street segment elevation =  1480.600(Ft.)
Length of street segment  =   464.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
```

```
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =     10.845(CFS)
Half street flow before street inlet =     10.845(CFS)
Existing pipe flow before street inlet =      3.438(CFS)
Number of street inlets = 1
Depth of flow =   0.743(Ft.), Average velocity =   3.145(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     16.151(Ft.)
 Flow rate in gutter section of street = Qw =      8.147(CFS)
 Ratio of frontal flow to total flow = E0 =  0.7513
 Given curb inlet length  L =      4.000(Ft.)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.5000 right of way
            25.0000             1.0000 top of curb
            25.0000             0.0000 flow line
            29.0000             0.5000 gutter/depression end
            29.0000             0.5000 grade break
            63.0000             1.1800 crown
 Length required for total flow interception = Lt
 Lt = .6 * Q^0.42 * Slope^.3 * (1/(n*Se)^.6 =     21.600(Ft.)
 where Manning's n = 0.0150 and Slope = street slope =  0.0084
 Se = Equivalent Street x-slope including depression =  0.0826
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  0.3083

Pipe calculations for under street flow rate of      6.781(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1484.500(Ft.)
Downstream point/station elevation =  1480.600(Ft.)
Pipe length  =   464.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.781(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     6.781(CFS)
Normal flow depth in pipe =   13.52(In.)
Flow top width inside pipe =   15.56(In.)
Critical Depth =   12.09(In.)
Pipe flow velocity =      4.77(Ft/s)
Travel time through pipe =    1.62 min.
Time of concentration (TC) =    28.22 min.
Maximum flow rate of street inlet(s) =      3.344(CFS)
Maximum pipe flow capacity =      6.781(CFS)
Remaining flow in street below inlet =      7.501(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
```

```
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.298(In/Hr) for a    10.0 year storm
Subarea runoff =      1.129(CFS) for      1.000(Ac.)
Total runoff =     15.411(CFS)   Total area =      12.900(Ac.)
Street flow at end of street =      8.630(CFS)
Half street flow at end of street =      8.630(CFS)
Depth of flow =   0.469(Ft.), Average velocity =   2.827(Ft/s)
Flow width (from curb towards crown)=  17.107(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.400 to Point/Station       10.300
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1480.600(Ft.)
End of street segment elevation =  1473.500(Ft.)
Length of street segment  =   760.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point

Pipe calculations for under street flow rate of      6.781(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1480.600(Ft.)
Downstream point/station elevation =  1473.500(Ft.)
Pipe length  =   760.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.781(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     6.781(CFS)
Normal flow depth in pipe =   13.52(In.)
Flow top width inside pipe =   15.56(In.)
Critical Depth =   12.09(In.)
Pipe flow velocity =      4.77(Ft/s)
Travel time through pipe =    2.66 min.
Time of concentration (TC) =    30.88 min.
Maximum flow rate of street inlet(s) =      0.000(CFS)
Maximum pipe flow capacity =      6.781(CFS)
Remaining flow in street below inlet =      8.630(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.237(In/Hr) for a    10.0 year storm
Subarea runoff =      1.720(CFS) for      1.600(Ac.)
Total runoff =     17.132(CFS)   Total area =      14.500(Ac.)
Street flow at end of street =     10.350(CFS)
```

```
Half street flow at end of street =     10.350(CFS)
Depth of flow =   0.487(Ft.), Average velocity =   3.075(Ft/s)
Flow width (from curb towards crown)=  17.998(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.300 to Point/Station       10.310
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1473.500(Ft.)
End of street segment elevation =  1473.490(Ft.)
Length of street segment  =    20.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =     10.350(CFS)
Half street flow before street inlet =     10.350(CFS)
Existing pipe flow before street inlet =      6.781(CFS)
Number of street inlets = 1
Depth of flow =   1.033(Ft.), Average velocity =   1.010(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     30.631(Ft.)
 Flow rate in gutter section of street = Qw =      4.092(CFS)
 Ratio of frontal flow to total flow = E0 =  0.3953
 Given curb inlet length  L =      6.000(Ft.)
Street slope is less than .5% , depth of flow indicates an orifice flow
condition exists for an opening height of   10.00(In.)
Using equation Qi = .67hL(2gd0)^.5
Total inlet flow capacity=     21.099(CFS)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.5000 right of way
            25.0000             1.0000 top of curb
            25.0000             0.0000 flow line
            29.0000             0.5000 gutter/depression end
            29.0000             0.5000 grade break
            63.0000             1.1800 crown
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  1.0000
Note: Single inlet capacity is greater than 1/2 street flow

Pipe calculations for under street flow rate of     17.132(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1473.500(Ft.)
Downstream point/station elevation =  1473.490(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.132(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.132(CFS)
```

```
Normal flow depth in pipe =   17.98(In.)
Flow top width inside pipe =   25.47(In.)
Critical Depth =   17.36(In.)
Pipe flow velocity =      6.09(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    30.93 min.
Maximum flow rate of street inlet(s) =     10.350(CFS)
Maximum pipe flow capacity =     17.132(CFS)
Remaining flow in street below inlet =      0.000(CFS)
Sump condition with all flow intercepted by street inlet
Insignificant sub-area being added to street
COMMERCIAL subarea type
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  67.25
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.236(In/Hr) for a    10.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =     17.132(CFS)   Total area =      14.500(Ac.)
End of computations, total study area =           14.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.190
Area averaged RI index number =  68.3
```

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              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
       Rational Hydrology Study        Date: 01/05/18  File:27259RAToNPRJK.out
------------------------------------------------------------------------------
 Street Flow Capacity AND Catch Basin Capacity - HAUN ROAD
 Mill Creek Promenade
 by Pacific Coast Land Consultants, Inc.
    q 100yr
------------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------------


Program License Serial Number 4066

------------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Sun City ] area used.
10 year storm 10 minute intensity =  2.250(In/Hr)
10 year storm 60 minute intensity =  0.870(In/Hr)
100 year storm 10 minute intensity =  3.360(In/Hr)
100 year storm 60 minute intensity =  1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.300(In/Hr)
Slope of intensity duration curve = 0.5300




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Process from Point/Station        9.300 to Point/Station        9.200
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   484.000(Ft.)
Top (of initial area) elevation =  1513.500(Ft.)
Bottom (of initial area) elevation =  1502.000(Ft.)
Difference in elevation =    11.500(Ft.)
Slope =    0.02376  s(percent)=       2.38
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.784 min.
Rainfall intensity =      2.477(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.847
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  89.65
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Initial subarea runoff =      3.043(CFS)
Total initial stream area =        1.450(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.200 to Point/Station        9.100
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =  1502.000(Ft.)
Downstream point elevation =  1495.000(Ft.)
Channel length thru subarea  =   852.000(Ft.)
Channel base width  =    0.000(Ft.)
Slope or 'Z' of left channel bank = 100.000
Slope or 'Z' of right channel bank = 100.000
Estimated mean flow rate at midpoint of channel =     11.891(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =     11.891(CFS)
Depth of flow =   0.235(Ft.), Average velocity =   2.154(Ft/s)
Channel flow top width =   46.993(Ft.)
Flow Velocity =    2.15(Ft/s)
Travel time  =    6.59 min.
Time of concentration =   24.38 min.

Sub-Channel No. 1 Critical depth =      0.244(Ft.)
  '     '       '     Critical flow top width =     48.828(Ft.)
  '     '       '     Critical flow velocity=    1.995(Ft/s)
  '     '       '     Critical flow area =      5.960(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.095(In/Hr) for a   100.0 year storm
Subarea runoff =     17.620(CFS) for      9.450(Ac.)
Total runoff =     20.663(CFS)   Total area =      10.900(Ac.)
Depth of flow =   0.289(Ft.), Average velocity =   2.473(Ft/s)

Sub-Channel No. 1 Critical depth =      0.305(Ft.)
  '     '       '     Critical flow top width =     60.938(Ft.)
  '     '       '     Critical flow velocity=    2.226(Ft/s)
  '     '       '     Critical flow area =      9.283(Sq.Ft)


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Process from Point/Station        9.100 to Point/Station        9.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________
Top of street segment elevation =  1495.000(Ft.)
End of street segment elevation =  1487.000(Ft.)
Length of street segment  =   208.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
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```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     21.327(CFS)
Depth of flow =   0.489(Ft.), Average velocity =   6.263(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.107(Ft.)
Flow velocity =   6.26(Ft/s)
Travel time =    0.55 min.     TC =   24.93  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.071(In/Hr) for a   100.0 year storm
Subarea runoff =      1.290(CFS) for      0.700(Ac.)
Total runoff =     21.953(CFS)   Total area =      11.600(Ac.)
Street flow at end of street =     21.953(CFS)
Half street flow at end of street =     21.953(CFS)
Depth of flow =   0.493(Ft.), Average velocity =   6.307(Ft/s)
Flow width (from curb towards crown)=  18.314(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station       10.500
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1487.000(Ft.)
End of street segment elevation =  1484.500(Ft.)
Length of street segment  =   193.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =     21.953(CFS)
Half street flow before street inlet =     21.953(CFS)
Existing pipe flow before street inlet =      0.000(CFS)
Number of street inlets = 1
Depth of flow =   0.832(Ft.), Average velocity =   4.316(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     20.606(Ft.)
 Flow rate in gutter section of street = Qw =     13.855(CFS)
 Ratio of frontal flow to total flow = E0 =  0.6311
```

```
 Given curb inlet length  L =      4.000(Ft.)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.5000 right of way
            25.0000             1.0000 top of curb
            25.0000             0.0000 flow line
            29.0000             0.5000 gutter/depression end
            29.0000             0.5000 grade break
            63.0000             1.1800 crown
 Length required for total flow interception = Lt
 Lt = .6 * Q^0.42 * Slope^.3 * (1/(n*Se)^.6 =     35.735(Ft.)
 where Manning's n = 0.0150 and Slope = street slope =  0.0130
 Se = Equivalent Street x-slope including depression =  0.0726
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  0.1924

Pipe calculations for under street flow rate of      4.223(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1487.000(Ft.)
Downstream point/station elevation =  1484.500(Ft.)
Pipe length  =   193.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.223(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.223(CFS)
Normal flow depth in pipe =   11.39(In.)
Flow top width inside pipe =   12.82(In.)
Critical Depth =    9.98(In.)
Pipe flow velocity =      4.23(Ft/s)
Travel time through pipe =    0.76 min.
Time of concentration (TC) =    25.69 min.
Maximum flow rate of street inlet(s) =      4.223(CFS)
Maximum pipe flow capacity =      4.223(CFS)
Remaining flow in street below inlet =     17.729(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.038(In/Hr) for a   100.0 year storm
Subarea runoff =      0.544(CFS) for      0.300(Ac.)
Total runoff =     22.497(CFS)   Total area =      11.900(Ac.)
Street flow at end of street =     18.273(CFS)
Half street flow at end of street =     18.273(CFS)
Depth of flow =   0.548(Ft.), Average velocity =   3.999(Ft/s)
Flow width (from curb towards crown)=  21.079(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.500 to Point/Station       10.400
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1484.500(Ft.)
End of street segment elevation =  1480.600(Ft.)
Length of street segment  =   464.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
```

```
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =     18.273(CFS)
Half street flow before street inlet =     18.273(CFS)
Existing pipe flow before street inlet =      4.223(CFS)
Number of street inlets = 1
Depth of flow =   0.838(Ft.), Average velocity =   3.502(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     20.924(Ft.)
 Flow rate in gutter section of street = Qw =     11.390(CFS)
 Ratio of frontal flow to total flow = E0 =  0.6233
 Given curb inlet length  L =      4.000(Ft.)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.5000 right of way
            25.0000             1.0000 top of curb
            25.0000             0.0000 flow line
            29.0000             0.5000 gutter/depression end
            29.0000             0.5000 grade break
            63.0000             1.1800 crown
 Length required for total flow interception = Lt
 Lt = .6 * Q^0.42 * Slope^.3 * (1/(n*Se)^.6 =     29.217(Ft.)
 where Manning's n = 0.0150 and Slope = street slope =  0.0084
 Se = Equivalent Street x-slope including depression =  0.0719
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  0.2328

Pipe calculations for under street flow rate of      8.478(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1484.500(Ft.)
Downstream point/station elevation =  1480.600(Ft.)
Pipe length  =   464.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.478(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.478(CFS)
Normal flow depth in pipe =   13.65(In.)
Flow top width inside pipe =   20.03(In.)
Critical Depth =   12.98(In.)
Pipe flow velocity =      5.12(Ft/s)
Travel time through pipe =    1.51 min.
Time of concentration (TC) =    27.20 min.
Maximum flow rate of street inlet(s) =      4.254(CFS)
Maximum pipe flow capacity =      8.478(CFS)
Remaining flow in street below inlet =     14.019(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
```

```
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.977(In/Hr) for a   100.0 year storm
Subarea runoff =      1.758(CFS) for      1.000(Ac.)
Total runoff =     24.255(CFS)   Total area =      12.900(Ac.)
Street flow at end of street =     15.777(CFS)
Half street flow at end of street =     15.777(CFS)
Depth of flow =   0.560(Ft.), Average velocity =   3.276(Ft/s)
Flow width (from curb towards crown)=  21.653(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.400 to Point/Station       10.300
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1480.600(Ft.)
End of street segment elevation =  1473.500(Ft.)
Length of street segment  =   760.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point

Pipe calculations for under street flow rate of      8.478(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1480.600(Ft.)
Downstream point/station elevation =  1473.500(Ft.)
Pipe length  =   760.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.478(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.478(CFS)
Normal flow depth in pipe =   13.65(In.)
Flow top width inside pipe =   20.03(In.)
Critical Depth =   12.98(In.)
Pipe flow velocity =      5.12(Ft/s)
Travel time through pipe =    2.47 min.
Time of concentration (TC) =    29.68 min.
Maximum flow rate of street inlet(s) =      0.000(CFS)
Maximum pipe flow capacity =      8.478(CFS)
Remaining flow in street below inlet =     15.777(CFS)
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.888(In/Hr) for a   100.0 year storm
Subarea runoff =      2.685(CFS) for      1.600(Ac.)
Total runoff =     26.940(CFS)   Total area =      14.500(Ac.)
Street flow at end of street =     18.462(CFS)
```

```
Half street flow at end of street =     18.462(CFS)
Depth of flow =   0.578(Ft.), Average velocity =   3.544(Ft/s)
Flow width (from curb towards crown)=  22.545(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.300 to Point/Station       10.310
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
______________________________________________________________________
Top of street segment elevation =  1473.500(Ft.)
End of street segment elevation =  1473.490(Ft.)
Length of street segment  =    20.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  34.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  25.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150

Street Inlet Calculations:
Street flow before street inlet =     18.462(CFS)
Half street flow before street inlet =     18.462(CFS)
Existing pipe flow before street inlet =      8.478(CFS)
Number of street inlets = 1
Depth of flow =   1.197(Ft.), Average velocity =   1.091(Ft/s)
U.S. DOT Hydraulic Engineering Circular No. 12 curb inlet calculations:
 Street flow half width at start of inlet =     38.000(Ft.)
 Flow rate in gutter section of street = Qw =      4.927(CFS)
 Ratio of frontal flow to total flow = E0 =  0.2668
 Given curb inlet length  L =      6.000(Ft.)
Street slope is less than .5% , depth of flow indicates an orifice flow
condition exists for an opening height of   10.00(In.)
Using equation Qi = .67hL(2gd0)^.5
Total inlet flow capacity=     23.754(CFS)

Half street cross section data points at curb inlet:
              X-coordinate (Ft.)   Y-coordinate (Ft.)
             0.0000             1.5000 right of way
            25.0000             1.0000 top of curb
            25.0000             0.0000 flow line
            29.0000             0.5000 gutter/depression end
            29.0000             0.5000 grade break
            63.0000             1.1800 crown
 Gutter depression depth =      4.000(In.)
 Gutter depression width =      4.000(Ft.)
 Efficiency = 1 - (1-L/Lt)^1.8 =  1.0000
Note: Single inlet capacity is greater than 1/2 street flow

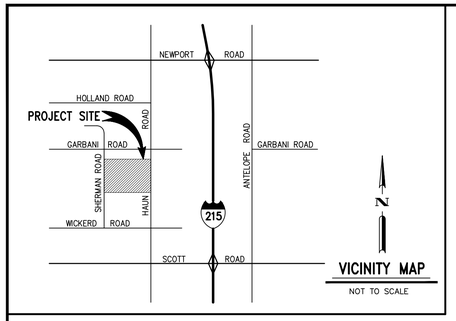
Pipe calculations for under street flow rate of     26.940(CFS)
Using a pipe slope =      0.500 %
Upstream point/station elevation =  1473.500(Ft.)
Downstream point/station elevation =  1473.490(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.940(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    26.940(CFS)
```

```
Normal flow depth in pipe =   22.88(In.)
Flow top width inside pipe =   25.53(In.)
Critical Depth =   21.23(In.)
Pipe flow velocity =      6.71(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    29.72 min.
Maximum flow rate of street inlet(s) =     18.462(CFS)
Maximum pipe flow capacity =     26.940(CFS)
Remaining flow in street below inlet =      0.000(CFS)
Sump condition with all flow intercepted by street inlet
Insignificant sub-area being added to street
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.250
RI index for soil(AMC 3)  =  83.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.886(In/Hr) for a   100.0 year storm
Subarea runoff =      0.000(CFS) for      0.000(Ac.)
Total runoff =     26.940(CFS)   Total area =      14.500(Ac.)
End of computations, total study area =           14.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

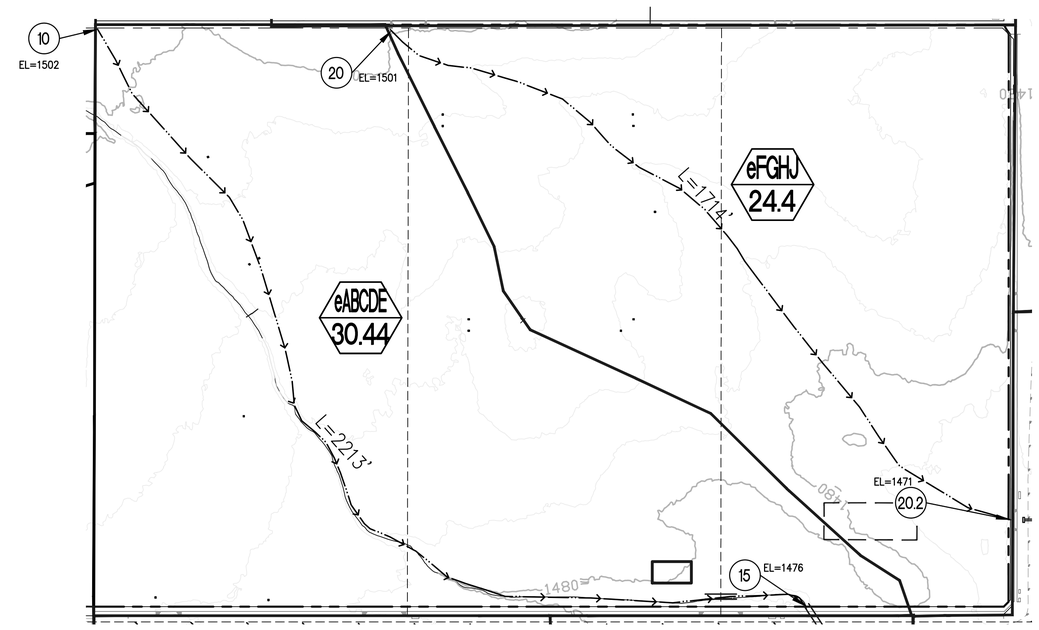
Area averaged pervious area fraction(Ap) = 0.190
Area averaged RI index number =  68.3
```

APPENDIX C – Unit Hydrograph Method
Existing & Proposed

1. 10yr – 1hr, 3hr, 6 hr, & 24 hr
2. 100yr – 1hr, 3hr, 6hr, & 24 hr



EXISTING DRAINAGE MAP



DRAINAGE LEGEND

SYMBOL	DEFINITION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	EXISTING DRAINAGE BOUNDARY
	DIRECTION OF EXISTING FLOW
Q100 = 10.2cfs	100 YEAR FLOW FOR AREA
Q10 = 6.2cfs	10 YEAR FLOW FOR AREA
L=762'	LENGTH OF TRAVEL
3 EL=1431	NODE WITH ELEVATION
eA 0.78	AREA NAME (ON-SITE EXISTING) AREA ACRES

100 YR

AREA DESIGNATION	AREA AC.	NODE	1HR (CFS)	3HR (CFS)	6HR (CFS)	24HR (CFS)
eABCDE	30.44	20.2	81.50	44.90	42.40	15.20
eFGHJ	24.40	15	73.30	37.40	34.00	12.20
TOTAL	54.84		154.80	82.30	76.40	27.40

10 YR

AREA DESIGNATION	AREA AC.	NODE	1HR (CFS)	3HR (CFS)	6HR (CFS)	24HR (CFS)
eABCDE	30.44	20.2	52.10	28.60	27.60	8.20
eFGHJ	24.40	15	47.70	23.90	22.20	6.60
TOTAL	54.84		99.80	52.50	49.80	14.80

2 YR

AREA DESIGNATION	AREA AC.	NODE	24HR (CFS)
eABCDE	30.44	20.2	3.31
eFGHJ	24.40	15	2.67
TOTAL	54.84		5.98

GRAPHIC SCALE

150 0 75 150 300 450

1 inch = 150 ft.

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600

REVISIONS

SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:

CHRIS D. HOPPER

RCE NO. 34821

DATE

Benjie

SEAL

REGISTERED PROFESSIONAL ENGINEER
CHRIS D. HOPPER
No. 34821
Exp. 9/30/17
CIVIL
STATE OF CALIFORNIA

SCALE:	1" =150'
DESIGN:	BAM/REK
DRAWN:	BENJIE/RGS
CHECKED:	HJK/BAM
APPROVED:	HJK/TPV
DATE:	MARCH, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH
DIRECTOR OF PUBLIC WORKS/
CITY ENGINEER

RCE 61253
EXP. 6/30/16

DATE

RECOMMENDED BY:

DATE

CITY OF MENIFEE

EXISTING DRAINAGE MAP
MILLCREEK PROMENADE
UNIT HYDROGRAPH METHOD 2YR, 10YR & 100YR

SHEET NO.

1 OF 1

PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\EXISTING\UH\27259-EXISTING_HYDRO_UH.dwg 2-26-18 11:23:19 AM

APPENDIX C.1 – Unit Hydrograph Method
Existing & Proposed
1. 10yr – 1hr, 3hr, 6 hr, & 24 hr

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Existing On-site Areas A to J- Areas, Length of Concentration, Nodes

Mark		Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
e ABCDE		30.44	2213	1224	10	1502.00	15.0	1476.00	26.00
e FGHJ		24.40	1714	857	20	1501.00	20.2	1471.00	30.00
	total	54.84							

Run-off Index			Perennial Grass
soil B	25%	61	15
soil C	50%	74	37
soil D	25%	80	20
		RI=	72

Imperviousness- undeveloped = 0

```
      U n i t   H y d r o g r a p h   A n a l y s i s

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             Study date  01/07/18 File: 27259UHeABCDE110.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eABCDE - Q10yr1hr(ONSITE)- Unit Hydrograph Method
--------------------------------------------------------------------
Drainage Area =      30.44(Ac.)  =      0.048 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      30.44(Ac.)  =      0.048
Sq. Mi.
Length along longest watercourse =    2213.00(Ft.)
Length along longest watercourse measured to centroid =    1224.00(Ft.)
Length along longest watercourse =      0.419 Mi.
Length along longest watercourse measured to centroid =      0.232 Mi.
Difference in elevation =      26.00(Ft.)
Slope along watercourse =     62.0334 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.113 Hr.
Lag time =     6.78 Min.
25% of lag time =     1.69 Min.
40% of lag time =     2.71 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         0.53               16.13

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         1.25               38.05

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    0.530(In)
Area Averaged 100-Year Rainfall =    1.250(In)

Point rain (area averaged) =    0.826(In)
Areal adjustment factor =   99.97 %
```

Adjusted average point rain = 0.826(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
30.440	72.00	0.000

Total Area Entered = 30.44(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	73.794	7.825	2.401
2	0.167	147.587	44.102	13.530
3	0.250	221.381	27.227	8.353
4	0.333	295.174	10.461	3.209
5	0.417	368.968	5.606	1.720
6	0.500	442.761	2.642	0.811
7	0.583	516.555	0.925	0.284
8	0.667	590.348	0.554	0.170
9	0.750	664.142	0.461	0.141
10	0.833	737.935	0.196	0.060
		Sum = 100.000	Sum=	30.678

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.337	0.173	---	0.16
2	0.17	4.70	0.466	0.173	---	0.29
3	0.25	4.70	0.466	0.173	---	0.29
4	0.33	5.10	0.506	0.173	---	0.33
5	0.42	5.80	0.575	0.173	---	0.40
6	0.50	5.90	0.585	0.173	---	0.41
7	0.58	7.10	0.704	0.173	---	0.53
8	0.67	8.70	0.862	0.173	---	0.69
9	0.75	13.20	1.308	0.173	---	1.14
10	0.83	29.70	2.944	0.173	---	2.77
11	0.92	7.70	0.763	0.173	---	0.59
12	1.00	4.00	0.396	0.173	---	0.22
Sum =		100.0			Sum =	7.8

Flood volume = Effective rainfall 0.65(In)
times area 30.4(Ac.)/[(In)/(Ft.)] = 1.7(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.440(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 72117.8 Cubic Feet

```
Total soil loss =       19151.4 Cubic Feet
-------------------------------------------------------------------
 Peak flow rate of this hydrograph =     52.094(CFS)
-------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    1 - H O U R    S T O R M
                R u n o f f     H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------
  0+ 5       0.0027      0.39  Q         |         |         |         |
  0+10       0.0228      2.92  VQ        |         |         |         |
  0+15       0.0643      6.03  |V  Q     |         |         |         |
  0+20       0.1176      7.73  | V  Q    |         |         |         |
  0+25       0.1804      9.13  |   V Q   |         |         |         |
  0+30       0.2546     10.78  |     VQ  |         |         |         |
  0+35       0.3376     12.05  |       Q |         |         |         |
  0+40       0.4374     14.48  |        QV         |         |         |
  0+45       0.5677     18.92  |         | QV      |         |         |
  0+50       0.7792     30.71  |         |       V Q         |         |
  0+55       1.1380     52.09  |         |         |      V  |   Q     |
  1+ 0       1.3941     37.18  |         |         |   Q     |  V      |
  1+ 5       1.5294     19.66  |         |  Q      |         |     V   |
  1+10       1.5970      9.81  |     Q   |         |         |       V |
  1+15       1.6281      4.52  |  Q      |         |         |        V|
  1+20       1.6417      1.97  |Q        |         |         |        V|
  1+25       1.6488      1.02  Q         |         |         |        V|
  1+30       1.6531      0.62  Q         |         |         |        V|
  1+35       1.6550      0.29  Q         |         |         |        V|
  1+40       1.6555      0.07  Q         |         |         |        V|
  1+45       1.6556      0.01  Q         |         |         |        V|
-------------------------------------------------------------------
```

```
      U n i t   H y d r o g r a p h   A n a l y s i s

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             Study date  01/07/18 File: 27259UHeABCDE310.out


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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eABCDE - Q10yr3hrn(ONSITE)- Unit Hydrograph Method
--------------------------------------------------------------------
Drainage Area =      30.44(Ac.)  =      0.048 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      30.44(Ac.)  =      0.048
Sq. Mi.
Length along longest watercourse =    2213.00(Ft.)
Length along longest watercourse measured to centroid =    1224.00(Ft.)
Length along longest watercourse =      0.419 Mi.
Length along longest watercourse measured to centroid =      0.232 Mi.
Difference in elevation =      26.00(Ft.)
Slope along watercourse =     62.0334 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.113 Hr.
Lag time =     6.78 Min.
25% of lag time =     1.69 Min.
40% of lag time =     2.71 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         0.85                25.87

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         1.90                57.84

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    0.850(In)
Area Averaged 100-Year Rainfall =    1.900(In)

Point rain (area averaged) =    1.282(In)
Areal adjustment factor =   99.99 %
```

Adjusted average point rain = 1.282(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
30.440	72.00	0.000

Total Area Entered = 30.44(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	73.794	7.825	2.401
2	0.167	147.587	44.102	13.530
3	0.250	221.381	27.227	8.353
4	0.333	295.174	10.461	3.209
5	0.417	368.968	5.606	1.720
6	0.500	442.761	2.642	0.811
7	0.583	516.555	0.925	0.284
8	0.667	590.348	0.554	0.170
9	0.750	664.142	0.461	0.141
10	0.833	737.935	0.196	0.060
		Sum = 100.000	Sum=	30.678

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.200	0.173	---	0.03
2	0.17	1.30	0.200	0.173	---	0.03
3	0.25	1.10	0.169	0.173	0.152	0.02
4	0.33	1.50	0.231	0.173	---	0.06
5	0.42	1.50	0.231	0.173	---	0.06
6	0.50	1.80	0.277	0.173	---	0.10
7	0.58	1.50	0.231	0.173	---	0.06
8	0.67	1.80	0.277	0.173	---	0.10
9	0.75	1.80	0.277	0.173	---	0.10
10	0.83	1.50	0.231	0.173	---	0.06
11	0.92	1.60	0.246	0.173	---	0.07
12	1.00	1.80	0.277	0.173	---	0.10
13	1.08	2.20	0.338	0.173	---	0.17
14	1.17	2.20	0.338	0.173	---	0.17
15	1.25	2.20	0.338	0.173	---	0.17
16	1.33	2.00	0.308	0.173	---	0.13
17	1.42	2.60	0.400	0.173	---	0.23
18	1.50	2.70	0.415	0.173	---	0.24
19	1.58	2.40	0.369	0.173	---	0.20
20	1.67	2.70	0.415	0.173	---	0.24
21	1.75	3.30	0.508	0.173	---	0.33

22	1.83	3.10	0.477	0.173	---	0.30
23	1.92	2.90	0.446	0.173	---	0.27
24	2.00	3.00	0.461	0.173	---	0.29
25	2.08	3.10	0.477	0.173	---	0.30
26	2.17	4.20	0.646	0.173	---	0.47
27	2.25	5.00	0.769	0.173	---	0.60
28	2.33	3.50	0.538	0.173	---	0.37
29	2.42	6.80	1.046	0.173	---	0.87
30	2.50	7.30	1.123	0.173	---	0.95
31	2.58	8.20	1.261	0.173	---	1.09
32	2.67	5.90	0.908	0.173	---	0.73
33	2.75	2.00	0.308	0.173	---	0.13
34	2.83	1.80	0.277	0.173	---	0.10
35	2.92	1.80	0.277	0.173	---	0.10
36	3.00	0.60	0.092	0.173	0.083	0.01
Sum =		100.0			Sum =	9.3

Flood volume = Effective rainfall 0.77(In)
times area 30.4(Ac.)/[(In)/(Ft.)] = 2.0(Ac.Ft)
Total soil loss = 0.51(In)
Total soil loss = 1.295(Ac.Ft)
Total rainfall = 1.28(In)
Flood volume = 85206.9 Cubic Feet
Total soil loss = 56429.3 Cubic Feet

Peak flow rate of this hydrograph = 28.582(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

```
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0034      0.42  Q         |         |         |         |
  0+15       0.0077      0.62  Q         |         |         |         |
  0+20       0.0123      0.68  Q         |         |         |         |
  0+25       0.0205      1.19  VQ        |         |         |         |
  0+30       0.0317      1.63  V Q       |         |         |         |
  0+35       0.0473      2.26  V  Q      |         |         |         |
  0+40       0.0624      2.20  |VQ       |         |         |         |
  0+45       0.0805      2.62  |V Q      |         |         |         |
  0+50       0.1000      2.84  | VQ      |         |         |         |
  0+55       0.1163      2.36  | VQ      |         |         |         |
  1+ 0       0.1323      2.32  | VQ      |         |         |         |
  1+ 5       0.1522      2.90  |  Q      |         |         |         |
  1+10       0.1796      3.97  |  V Q    |         |         |         |
  1+15       0.2111      4.58  |   V Q   |         |         |         |
  1+20       0.2439      4.76  |   V Q   |         |         |         |
  1+25       0.2762      4.69  |    VQ   |         |         |         |
  1+30       0.3159      5.78  |     VQ  |         |         |         |
  1+35       0.3612      6.57  |      VQ |         |         |         |
  1+40       0.4055      6.44  |       Q |         |         |         |
  1+45       0.4544      7.10  |        Q|         |         |         |
  1+50       0.5137      8.60  |         VQ        |         |         |
  1+55       0.5755      8.99  |         |Q        |         |         |
  2+ 0       0.6355      8.71  |         |QV       |         |         |
  2+ 5       0.6961      8.79  |         |Q  V     |         |         |
  2+10       0.7613      9.47  |         | Q  V    |         |         |
  2+15       0.8452     12.19  |         |     QV  |         |         |
  2+20       0.9469     14.77  |         |        Q|         |         |
```

```
    2+25       1.0467     14.48  |         |        Q|V        |         |
    2+30       1.1865     20.31  |         |         |   V  Q  |         |
    2+35       1.3624     25.53  |         |         |      V  |   Q     |
    2+40       1.5592     28.58  |         |         |         |V      Q |
    2+45       1.7280     24.51  |         |         |         | Q  V    |
    2+50       1.8267     14.33  |         |        Q|         |      V  |
    2+55       1.8831      8.20  |         Q         |         |       V |
    3+ 0       1.9201      5.37  |      Q  |         |         |        V|
    3+ 5       1.9392      2.77  |  Q      |         |         |        V|
    3+10       1.9480      1.28  |Q        |         |         |        V|
    3+15       1.9525      0.67  Q         |         |         |        V|
    3+20       1.9548      0.32  Q         |         |         |        V|
    3+25       1.9556      0.12  Q         |         |         |        V|
    3+30       1.9559      0.04  Q         |         |         |        V|
    3+35       1.9560      0.02  Q         |         |         |        V|
    3+40       1.9561      0.01  Q         |         |         |        V|
    3+45       1.9561      0.00  Q         |         |         |         V
-----------------------------------------------------------------------
```

```
      U n i t   H y d r o g r a p h   A n a l y s i s

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            Study date  01/07/18 File: 27259UHeABCDE610.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format
--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eABCDE - Q10yr6hr(ONSITE)- Unit Hydrograph Method

-------------------------------------------------------------------
Drainage Area =      30.44(Ac.)  =      0.048 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      30.44(Ac.)  =      0.048
Sq. Mi.
Length along longest watercourse =    2213.00(Ft.)
Length along longest watercourse measured to centroid =    1224.00(Ft.)
Length along longest watercourse =      0.419 Mi.
Length along longest watercourse measured to centroid =      0.232 Mi.
Difference in elevation =      26.00(Ft.)
Slope along watercourse =     62.0334 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.113 Hr.
Lag time =     6.78 Min.
25% of lag time =     1.69 Min.
40% of lag time =     2.71 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         1.30               39.57

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         2.75               83.71

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.300(In)
Area Averaged 100-Year Rainfall =    2.750(In)

Point rain (area averaged) =    1.897(In)
Areal adjustment factor =   99.99 %
```

Adjusted average point rain = 1.896(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
30.440	72.00	0.000

Total Area Entered = 30.44(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	73.794	7.825	2.401
2	0.167	147.587	44.102	13.530
3	0.250	221.381	27.227	8.353
4	0.333	295.174	10.461	3.209
5	0.417	368.968	5.606	1.720
6	0.500	442.761	2.642	0.811
7	0.583	516.555	0.925	0.284
8	0.667	590.348	0.554	0.170
9	0.750	664.142	0.461	0.141
10	0.833	737.935	0.196	0.060
		Sum = 100.000	Sum=	30.678

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.114	0.173	0.102	0.01
2	0.17	0.60	0.137	0.173	0.123	0.01
3	0.25	0.60	0.137	0.173	0.123	0.01
4	0.33	0.60	0.137	0.173	0.123	0.01
5	0.42	0.60	0.137	0.173	0.123	0.01
6	0.50	0.70	0.159	0.173	0.143	0.02
7	0.58	0.70	0.159	0.173	0.143	0.02
8	0.67	0.70	0.159	0.173	0.143	0.02
9	0.75	0.70	0.159	0.173	0.143	0.02
10	0.83	0.70	0.159	0.173	0.143	0.02
11	0.92	0.70	0.159	0.173	0.143	0.02
12	1.00	0.80	0.182	0.173	---	0.01
13	1.08	0.80	0.182	0.173	---	0.01
14	1.17	0.80	0.182	0.173	---	0.01
15	1.25	0.80	0.182	0.173	---	0.01
16	1.33	0.80	0.182	0.173	---	0.01
17	1.42	0.80	0.182	0.173	---	0.01
18	1.50	0.80	0.182	0.173	---	0.01
19	1.58	0.80	0.182	0.173	---	0.01
20	1.67	0.80	0.182	0.173	---	0.01
21	1.75	0.80	0.182	0.173	---	0.01

22	1.83	0.80	0.182	0.173	---	0.01
23	1.92	0.80	0.182	0.173	---	0.01
24	2.00	0.90	0.205	0.173	---	0.03
25	2.08	0.80	0.182	0.173	---	0.01
26	2.17	0.90	0.205	0.173	---	0.03
27	2.25	0.90	0.205	0.173	---	0.03
28	2.33	0.90	0.205	0.173	---	0.03
29	2.42	0.90	0.205	0.173	---	0.03
30	2.50	0.90	0.205	0.173	---	0.03
31	2.58	0.90	0.205	0.173	---	0.03
32	2.67	0.90	0.205	0.173	---	0.03
33	2.75	1.00	0.228	0.173	---	0.05
34	2.83	1.00	0.228	0.173	---	0.05
35	2.92	1.00	0.228	0.173	---	0.05
36	3.00	1.00	0.228	0.173	---	0.05
37	3.08	1.00	0.228	0.173	---	0.05
38	3.17	1.10	0.250	0.173	---	0.08
39	3.25	1.10	0.250	0.173	---	0.08
40	3.33	1.10	0.250	0.173	---	0.08
41	3.42	1.20	0.273	0.173	---	0.10
42	3.50	1.30	0.296	0.173	---	0.12
43	3.58	1.40	0.319	0.173	---	0.15
44	3.67	1.40	0.319	0.173	---	0.15
45	3.75	1.50	0.341	0.173	---	0.17
46	3.83	1.50	0.341	0.173	---	0.17
47	3.92	1.60	0.364	0.173	---	0.19
48	4.00	1.60	0.364	0.173	---	0.19
49	4.08	1.70	0.387	0.173	---	0.21
50	4.17	1.80	0.410	0.173	---	0.24
51	4.25	1.90	0.432	0.173	---	0.26
52	4.33	2.00	0.455	0.173	---	0.28
53	4.42	2.10	0.478	0.173	---	0.30
54	4.50	2.10	0.478	0.173	---	0.30
55	4.58	2.20	0.501	0.173	---	0.33
56	4.67	2.30	0.523	0.173	---	0.35
57	4.75	2.40	0.546	0.173	---	0.37
58	4.83	2.40	0.546	0.173	---	0.37
59	4.92	2.50	0.569	0.173	---	0.40
60	5.00	2.60	0.592	0.173	---	0.42
61	5.08	3.10	0.705	0.173	---	0.53
62	5.17	3.60	0.819	0.173	---	0.65
63	5.25	3.90	0.887	0.173	---	0.71
64	5.33	4.20	0.956	0.173	---	0.78
65	5.42	4.70	1.070	0.173	---	0.90
66	5.50	5.60	1.274	0.173	---	1.10
67	5.58	1.90	0.432	0.173	---	0.26
68	5.67	0.90	0.205	0.173	---	0.03
69	5.75	0.60	0.137	0.173	0.123	0.01
70	5.83	0.50	0.114	0.173	0.102	0.01
71	5.92	0.30	0.068	0.173	0.061	0.01
72	6.00	0.20	0.046	0.173	0.041	0.00
Sum =		100.0			Sum =	11.1

Flood volume = Effective rainfall 0.92(In)
times area 30.4(Ac.)/[(In)/(Ft.)] = 2.3(Ac.Ft)
Total soil loss = 0.97(In)
Total soil loss = 2.465(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 102164.6 Cubic Feet
Total soil loss = 107376.1 Cubic Feet

Peak flow rate of this hydrograph = 27.582(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 7.5 15.0 22.5 30.0
0+ 5	0.0002	0.03	Q
0+10	0.0015	0.19	Q
0+15	0.0036	0.31	Q
0+20	0.0062	0.37	Q
0+25	0.0089	0.40	Q
0+30	0.0117	0.41	Q
0+35	0.0148	0.45	Q
0+40	0.0181	0.47	Q
0+45	0.0214	0.48	Q
0+50	0.0247	0.49	Q
0+55	0.0281	0.49	Q
1+ 0	0.0313	0.47	Q
1+ 5	0.0339	0.37	Q
1+10	0.0361	0.31	Q
1+15	0.0381	0.29	Q
1+20	0.0400	0.28	Q
1+25	0.0419	0.27	Q
1+30	0.0437	0.27	Q
1+35	0.0456	0.27	Q
1+40	0.0474	0.27	Q
1+45	0.0493	0.27	Q
1+50	0.0511	0.27	Q
1+55	0.0530	0.27	Q
2+ 0	0.0552	0.32	Q
2+ 5	0.0592	0.58	QV
2+10	0.0627	0.51	QV
2+15	0.0675	0.70	QV
2+20	0.0735	0.86	|Q
2+25	0.0797	0.91	|Q
2+30	0.0862	0.94	|Q
2+35	0.0928	0.96	|Q
2+40	0.0994	0.96	|Q
2+45	0.1064	1.02	|Q
2+50	0.1156	1.33	|Q
2+55	0.1260	1.52	| Q
3+ 0	0.1370	1.59	| Q
3+ 5	0.1482	1.63	| Q
3+10	0.1600	1.70	| Q
3+15	0.1739	2.02	| Q
3+20	0.1891	2.21	| QV
3+25	0.2053	2.34	| Q
3+30	0.2242	2.75	| Q
3+35	0.2470	3.32	| Q
3+40	0.2739	3.90	| VQ
3+45	0.3032	4.26	| Q
3+50	0.3356	4.70	| VQ
3+55	0.3701	5.01	| Q
4+ 0	0.4074	5.42	| VQ
4+ 5	0.4467	5.72	| Q
4+10	0.4893	6.18	| Q
4+15	0.5360	6.78	| Q|
4+20	0.5872	7.43	| QV
4+25	0.6430	8.11	| Q
4+30	0.7032	8.74	| |Q
4+35	0.7661	9.13	| | QV

```
    4+40       0.8324      9.63  |         | Q V     |         |         |
    4+45       0.9031     10.26  |         |  Q V    |         |         |
    4+50       0.9779     10.86  |         |   Q V   |         |         |
    4+55       1.0552     11.23  |         |   Q  V  |         |         |
    5+ 0       1.1360     11.73  |         |    Q   V|         |         |
    5+ 5       1.2226     12.57  |         |     Q   V         |         |
    5+10       1.3237     14.68  |         |        Q| V       |         |
    5+15       1.4440     17.46  |         |         |  QV     |         |
    5+20       1.5813     19.93  |         |         |     Q   |         |
    5+25       1.7348     22.29  |         |         |        Q|         |
    5+30       1.9098     25.41  |         |         |         | VQ      |
    5+35       2.0998     27.58  |         |         |         |    VQ   |
    5+40       2.2233     17.94  |         |         |  Q      |      V  |
    5+45       2.2836      8.75  |         |Q        |         |       V |
    5+50       2.3139      4.40  |    Q    |         |         |        V|
    5+55       2.3294      2.25  |  Q      |         |         |        V|
    6+ 0       2.3371      1.13  |Q        |         |         |        V|
    6+ 5       2.3415      0.64  Q         |         |         |        V|
    6+10       2.3440      0.35  Q         |         |         |        V|
    6+15       2.3450      0.15  Q         |         |         |        V|
    6+20       2.3452      0.04  Q         |         |         |        V|
    6+25       2.3453      0.01  Q         |         |         |        V|
    6+30       2.3453      0.00  Q         |         |         |        V|
    6+35       2.3454      0.00  Q         |         |         |        V|
    6+40       2.3454      0.00  Q         |         |         |        V|
    6+45       2.3454      0.00  Q         |         |         |         V
-----------------------------------------------------------------------
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      U n i t   H y d r o g r a p h   A n a l y s i s

      Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
            Study date  01/07/18 File: 27259UHeABCDE2410.out


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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format
--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eABCDE - Q10yr24hr(ONSITE)- Unit Hydrograph Method

-------------------------------------------------------------------
Drainage Area =      30.44(Ac.)  =      0.048 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      30.44(Ac.)  =      0.048
Sq. Mi.
Length along longest watercourse =    2213.00(Ft.)
Length along longest watercourse measured to centroid =    1224.00(Ft.)
Length along longest watercourse =      0.419 Mi.
Length along longest watercourse measured to centroid =      0.232 Mi.
Difference in elevation =      26.00(Ft.)
Slope along watercourse =     62.0334 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.113 Hr.
Lag time =     6.78 Min.
25% of lag time =     1.69 Min.
40% of lag time =     2.71 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         1.90                57.84

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       30.44         4.75               144.59

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.900(In)
Area Averaged 100-Year Rainfall =    4.750(In)

Point rain (area averaged) =    3.073(In)
Areal adjustment factor =   99.99 %
```

Adjusted average point rain = 3.072(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
30.440	72.00	0.000

Total Area Entered = 30.44(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	73.794	7.825	2.401
2	0.167	147.587	44.102	13.530
3	0.250	221.381	27.227	8.353
4	0.333	295.174	10.461	3.209
5	0.417	368.968	5.606	1.720
6	0.500	442.761	2.642	0.811
7	0.583	516.555	0.925	0.284
8	0.667	590.348	0.554	0.170
9	0.750	664.142	0.461	0.141
10	0.833	737.935	0.196	0.060
			Sum = 100.000 Sum=	30.678

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.025	0.307	0.022	0.00
2	0.17	0.07	0.025	0.306	0.022	0.00
3	0.25	0.07	0.025	0.305	0.022	0.00
4	0.33	0.10	0.037	0.304	0.033	0.00
5	0.42	0.10	0.037	0.303	0.033	0.00
6	0.50	0.10	0.037	0.301	0.033	0.00
7	0.58	0.10	0.037	0.300	0.033	0.00
8	0.67	0.10	0.037	0.299	0.033	0.00
9	0.75	0.10	0.037	0.298	0.033	0.00
10	0.83	0.13	0.049	0.297	0.044	0.00
11	0.92	0.13	0.049	0.295	0.044	0.00
12	1.00	0.13	0.049	0.294	0.044	0.00
13	1.08	0.10	0.037	0.293	0.033	0.00
14	1.17	0.10	0.037	0.292	0.033	0.00
15	1.25	0.10	0.037	0.291	0.033	0.00
16	1.33	0.10	0.037	0.290	0.033	0.00
17	1.42	0.10	0.037	0.289	0.033	0.00
18	1.50	0.10	0.037	0.287	0.033	0.00
19	1.58	0.10	0.037	0.286	0.033	0.00
20	1.67	0.10	0.037	0.285	0.033	0.00
21	1.75	0.10	0.037	0.284	0.033	0.00

22	1.83	0.13	0.049	0.283	0.044	0.00
23	1.92	0.13	0.049	0.282	0.044	0.00
24	2.00	0.13	0.049	0.281	0.044	0.00
25	2.08	0.13	0.049	0.279	0.044	0.00
26	2.17	0.13	0.049	0.278	0.044	0.00
27	2.25	0.13	0.049	0.277	0.044	0.00
28	2.33	0.13	0.049	0.276	0.044	0.00
29	2.42	0.13	0.049	0.275	0.044	0.00
30	2.50	0.13	0.049	0.274	0.044	0.00
31	2.58	0.17	0.061	0.273	0.055	0.01
32	2.67	0.17	0.061	0.271	0.055	0.01
33	2.75	0.17	0.061	0.270	0.055	0.01
34	2.83	0.17	0.061	0.269	0.055	0.01
35	2.92	0.17	0.061	0.268	0.055	0.01
36	3.00	0.17	0.061	0.267	0.055	0.01
37	3.08	0.17	0.061	0.266	0.055	0.01
38	3.17	0.17	0.061	0.265	0.055	0.01
39	3.25	0.17	0.061	0.264	0.055	0.01
40	3.33	0.17	0.061	0.263	0.055	0.01
41	3.42	0.17	0.061	0.262	0.055	0.01
42	3.50	0.17	0.061	0.260	0.055	0.01
43	3.58	0.17	0.061	0.259	0.055	0.01
44	3.67	0.17	0.061	0.258	0.055	0.01
45	3.75	0.17	0.061	0.257	0.055	0.01
46	3.83	0.20	0.074	0.256	0.066	0.01
47	3.92	0.20	0.074	0.255	0.066	0.01
48	4.00	0.20	0.074	0.254	0.066	0.01
49	4.08	0.20	0.074	0.253	0.066	0.01
50	4.17	0.20	0.074	0.252	0.066	0.01
51	4.25	0.20	0.074	0.251	0.066	0.01
52	4.33	0.23	0.086	0.250	0.077	0.01
53	4.42	0.23	0.086	0.249	0.077	0.01
54	4.50	0.23	0.086	0.248	0.077	0.01
55	4.58	0.23	0.086	0.246	0.077	0.01
56	4.67	0.23	0.086	0.245	0.077	0.01
57	4.75	0.23	0.086	0.244	0.077	0.01
58	4.83	0.27	0.098	0.243	0.088	0.01
59	4.92	0.27	0.098	0.242	0.088	0.01
60	5.00	0.27	0.098	0.241	0.088	0.01
61	5.08	0.20	0.074	0.240	0.066	0.01
62	5.17	0.20	0.074	0.239	0.066	0.01
63	5.25	0.20	0.074	0.238	0.066	0.01
64	5.33	0.23	0.086	0.237	0.077	0.01
65	5.42	0.23	0.086	0.236	0.077	0.01
66	5.50	0.23	0.086	0.235	0.077	0.01
67	5.58	0.27	0.098	0.234	0.088	0.01
68	5.67	0.27	0.098	0.233	0.088	0.01
69	5.75	0.27	0.098	0.232	0.088	0.01
70	5.83	0.27	0.098	0.231	0.088	0.01
71	5.92	0.27	0.098	0.230	0.088	0.01
72	6.00	0.27	0.098	0.229	0.088	0.01
73	6.08	0.30	0.111	0.228	0.100	0.01
74	6.17	0.30	0.111	0.227	0.100	0.01
75	6.25	0.30	0.111	0.226	0.100	0.01
76	6.33	0.30	0.111	0.225	0.100	0.01
77	6.42	0.30	0.111	0.224	0.100	0.01
78	6.50	0.30	0.111	0.223	0.100	0.01
79	6.58	0.33	0.123	0.222	0.111	0.01
80	6.67	0.33	0.123	0.221	0.111	0.01
81	6.75	0.33	0.123	0.220	0.111	0.01
82	6.83	0.33	0.123	0.219	0.111	0.01
83	6.92	0.33	0.123	0.218	0.111	0.01
84	7.00	0.33	0.123	0.217	0.111	0.01

85	7.08	0.33	0.123	0.216	0.111	0.01
86	7.17	0.33	0.123	0.215	0.111	0.01
87	7.25	0.33	0.123	0.214	0.111	0.01
88	7.33	0.37	0.135	0.213	0.122	0.01
89	7.42	0.37	0.135	0.212	0.122	0.01
90	7.50	0.37	0.135	0.211	0.122	0.01
91	7.58	0.40	0.147	0.210	0.133	0.01
92	7.67	0.40	0.147	0.209	0.133	0.01
93	7.75	0.40	0.147	0.208	0.133	0.01
94	7.83	0.43	0.160	0.207	0.144	0.02
95	7.92	0.43	0.160	0.206	0.144	0.02
96	8.00	0.43	0.160	0.205	0.144	0.02
97	8.08	0.50	0.184	0.204	0.166	0.02
98	8.17	0.50	0.184	0.203	0.166	0.02
99	8.25	0.50	0.184	0.202	0.166	0.02
100	8.33	0.50	0.184	0.201	0.166	0.02
101	8.42	0.50	0.184	0.200	0.166	0.02
102	8.50	0.50	0.184	0.199	0.166	0.02
103	8.58	0.53	0.197	0.199	0.177	0.02
104	8.67	0.53	0.197	0.198	0.177	0.02
105	8.75	0.53	0.197	0.197	0.177	0.02
106	8.83	0.57	0.209	0.196	---	0.01
107	8.92	0.57	0.209	0.195	---	0.01
108	9.00	0.57	0.209	0.194	---	0.02
109	9.08	0.63	0.233	0.193	---	0.04
110	9.17	0.63	0.233	0.192	---	0.04
111	9.25	0.63	0.233	0.191	---	0.04
112	9.33	0.67	0.246	0.190	---	0.06
113	9.42	0.67	0.246	0.189	---	0.06
114	9.50	0.67	0.246	0.188	---	0.06
115	9.58	0.70	0.258	0.187	---	0.07
116	9.67	0.70	0.258	0.187	---	0.07
117	9.75	0.70	0.258	0.186	---	0.07
118	9.83	0.73	0.270	0.185	---	0.09
119	9.92	0.73	0.270	0.184	---	0.09
120	10.00	0.73	0.270	0.183	---	0.09
121	10.08	0.50	0.184	0.182	---	0.00
122	10.17	0.50	0.184	0.181	---	0.00
123	10.25	0.50	0.184	0.180	---	0.00
124	10.33	0.50	0.184	0.180	---	0.00
125	10.42	0.50	0.184	0.179	---	0.01
126	10.50	0.50	0.184	0.178	---	0.01
127	10.58	0.67	0.246	0.177	---	0.07
128	10.67	0.67	0.246	0.176	---	0.07
129	10.75	0.67	0.246	0.175	---	0.07
130	10.83	0.67	0.246	0.174	---	0.07
131	10.92	0.67	0.246	0.173	---	0.07
132	11.00	0.67	0.246	0.173	---	0.07
133	11.08	0.63	0.233	0.172	---	0.06
134	11.17	0.63	0.233	0.171	---	0.06
135	11.25	0.63	0.233	0.170	---	0.06
136	11.33	0.63	0.233	0.169	---	0.06
137	11.42	0.63	0.233	0.168	---	0.07
138	11.50	0.63	0.233	0.168	---	0.07
139	11.58	0.57	0.209	0.167	---	0.04
140	11.67	0.57	0.209	0.166	---	0.04
141	11.75	0.57	0.209	0.165	---	0.04
142	11.83	0.60	0.221	0.164	---	0.06
143	11.92	0.60	0.221	0.163	---	0.06
144	12.00	0.60	0.221	0.163	---	0.06
145	12.08	0.83	0.307	0.162	---	0.15
146	12.17	0.83	0.307	0.161	---	0.15
147	12.25	0.83	0.307	0.160	---	0.15

148	12.33	0.87	0.320	0.159	---	0.16
149	12.42	0.87	0.320	0.159	---	0.16
150	12.50	0.87	0.320	0.158	---	0.16
151	12.58	0.93	0.344	0.157	---	0.19
152	12.67	0.93	0.344	0.156	---	0.19
153	12.75	0.93	0.344	0.155	---	0.19
154	12.83	0.97	0.356	0.155	---	0.20
155	12.92	0.97	0.356	0.154	---	0.20
156	13.00	0.97	0.356	0.153	---	0.20
157	13.08	1.13	0.418	0.152	---	0.27
158	13.17	1.13	0.418	0.152	---	0.27
159	13.25	1.13	0.418	0.151	---	0.27
160	13.33	1.13	0.418	0.150	---	0.27
161	13.42	1.13	0.418	0.149	---	0.27
162	13.50	1.13	0.418	0.148	---	0.27
163	13.58	0.77	0.283	0.148	---	0.13
164	13.67	0.77	0.283	0.147	---	0.14
165	13.75	0.77	0.283	0.146	---	0.14
166	13.83	0.77	0.283	0.145	---	0.14
167	13.92	0.77	0.283	0.145	---	0.14
168	14.00	0.77	0.283	0.144	---	0.14
169	14.08	0.90	0.332	0.143	---	0.19
170	14.17	0.90	0.332	0.143	---	0.19
171	14.25	0.90	0.332	0.142	---	0.19
172	14.33	0.87	0.320	0.141	---	0.18
173	14.42	0.87	0.320	0.140	---	0.18
174	14.50	0.87	0.320	0.140	---	0.18
175	14.58	0.87	0.320	0.139	---	0.18
176	14.67	0.87	0.320	0.138	---	0.18
177	14.75	0.87	0.320	0.137	---	0.18
178	14.83	0.83	0.307	0.137	---	0.17
179	14.92	0.83	0.307	0.136	---	0.17
180	15.00	0.83	0.307	0.135	---	0.17
181	15.08	0.80	0.295	0.135	---	0.16
182	15.17	0.80	0.295	0.134	---	0.16
183	15.25	0.80	0.295	0.133	---	0.16
184	15.33	0.77	0.283	0.133	---	0.15
185	15.42	0.77	0.283	0.132	---	0.15
186	15.50	0.77	0.283	0.131	---	0.15
187	15.58	0.63	0.233	0.131	---	0.10
188	15.67	0.63	0.233	0.130	---	0.10
189	15.75	0.63	0.233	0.129	---	0.10
190	15.83	0.63	0.233	0.129	---	0.10
191	15.92	0.63	0.233	0.128	---	0.11
192	16.00	0.63	0.233	0.127	---	0.11
193	16.08	0.13	0.049	0.127	0.044	0.00
194	16.17	0.13	0.049	0.126	0.044	0.00
195	16.25	0.13	0.049	0.125	0.044	0.00
196	16.33	0.13	0.049	0.125	0.044	0.00
197	16.42	0.13	0.049	0.124	0.044	0.00
198	16.50	0.13	0.049	0.123	0.044	0.00
199	16.58	0.10	0.037	0.123	0.033	0.00
200	16.67	0.10	0.037	0.122	0.033	0.00
201	16.75	0.10	0.037	0.122	0.033	0.00
202	16.83	0.10	0.037	0.121	0.033	0.00
203	16.92	0.10	0.037	0.120	0.033	0.00
204	17.00	0.10	0.037	0.120	0.033	0.00
205	17.08	0.17	0.061	0.119	0.055	0.01
206	17.17	0.17	0.061	0.119	0.055	0.01
207	17.25	0.17	0.061	0.118	0.055	0.01
208	17.33	0.17	0.061	0.117	0.055	0.01
209	17.42	0.17	0.061	0.117	0.055	0.01
210	17.50	0.17	0.061	0.116	0.055	0.01

211	17.58	0.17	0.061	0.116	0.055	0.01
212	17.67	0.17	0.061	0.115	0.055	0.01
213	17.75	0.17	0.061	0.114	0.055	0.01
214	17.83	0.13	0.049	0.114	0.044	0.00
215	17.92	0.13	0.049	0.113	0.044	0.00
216	18.00	0.13	0.049	0.113	0.044	0.00
217	18.08	0.13	0.049	0.112	0.044	0.00
218	18.17	0.13	0.049	0.112	0.044	0.00
219	18.25	0.13	0.049	0.111	0.044	0.00
220	18.33	0.13	0.049	0.111	0.044	0.00
221	18.42	0.13	0.049	0.110	0.044	0.00
222	18.50	0.13	0.049	0.109	0.044	0.00
223	18.58	0.10	0.037	0.109	0.033	0.00
224	18.67	0.10	0.037	0.108	0.033	0.00
225	18.75	0.10	0.037	0.108	0.033	0.00
226	18.83	0.07	0.025	0.107	0.022	0.00
227	18.92	0.07	0.025	0.107	0.022	0.00
228	19.00	0.07	0.025	0.106	0.022	0.00
229	19.08	0.10	0.037	0.106	0.033	0.00
230	19.17	0.10	0.037	0.105	0.033	0.00
231	19.25	0.10	0.037	0.105	0.033	0.00
232	19.33	0.13	0.049	0.104	0.044	0.00
233	19.42	0.13	0.049	0.104	0.044	0.00
234	19.50	0.13	0.049	0.103	0.044	0.00
235	19.58	0.10	0.037	0.103	0.033	0.00
236	19.67	0.10	0.037	0.102	0.033	0.00
237	19.75	0.10	0.037	0.102	0.033	0.00
238	19.83	0.07	0.025	0.102	0.022	0.00
239	19.92	0.07	0.025	0.101	0.022	0.00
240	20.00	0.07	0.025	0.101	0.022	0.00
241	20.08	0.10	0.037	0.100	0.033	0.00
242	20.17	0.10	0.037	0.100	0.033	0.00
243	20.25	0.10	0.037	0.099	0.033	0.00
244	20.33	0.10	0.037	0.099	0.033	0.00
245	20.42	0.10	0.037	0.098	0.033	0.00
246	20.50	0.10	0.037	0.098	0.033	0.00
247	20.58	0.10	0.037	0.098	0.033	0.00
248	20.67	0.10	0.037	0.097	0.033	0.00
249	20.75	0.10	0.037	0.097	0.033	0.00
250	20.83	0.07	0.025	0.096	0.022	0.00
251	20.92	0.07	0.025	0.096	0.022	0.00
252	21.00	0.07	0.025	0.096	0.022	0.00
253	21.08	0.10	0.037	0.095	0.033	0.00
254	21.17	0.10	0.037	0.095	0.033	0.00
255	21.25	0.10	0.037	0.095	0.033	0.00
256	21.33	0.07	0.025	0.094	0.022	0.00
257	21.42	0.07	0.025	0.094	0.022	0.00
258	21.50	0.07	0.025	0.093	0.022	0.00
259	21.58	0.10	0.037	0.093	0.033	0.00
260	21.67	0.10	0.037	0.093	0.033	0.00
261	21.75	0.10	0.037	0.092	0.033	0.00
262	21.83	0.07	0.025	0.092	0.022	0.00
263	21.92	0.07	0.025	0.092	0.022	0.00
264	22.00	0.07	0.025	0.092	0.022	0.00
265	22.08	0.10	0.037	0.091	0.033	0.00
266	22.17	0.10	0.037	0.091	0.033	0.00
267	22.25	0.10	0.037	0.091	0.033	0.00
268	22.33	0.07	0.025	0.090	0.022	0.00
269	22.42	0.07	0.025	0.090	0.022	0.00
270	22.50	0.07	0.025	0.090	0.022	0.00
271	22.58	0.07	0.025	0.090	0.022	0.00
272	22.67	0.07	0.025	0.089	0.022	0.00
273	22.75	0.07	0.025	0.089	0.022	0.00

274	22.83	0.07	0.025	0.089	0.022	0.00
275	22.92	0.07	0.025	0.089	0.022	0.00
276	23.00	0.07	0.025	0.088	0.022	0.00
277	23.08	0.07	0.025	0.088	0.022	0.00
278	23.17	0.07	0.025	0.088	0.022	0.00
279	23.25	0.07	0.025	0.088	0.022	0.00
280	23.33	0.07	0.025	0.088	0.022	0.00
281	23.42	0.07	0.025	0.087	0.022	0.00
282	23.50	0.07	0.025	0.087	0.022	0.00
283	23.58	0.07	0.025	0.087	0.022	0.00
284	23.67	0.07	0.025	0.087	0.022	0.00
285	23.75	0.07	0.025	0.087	0.022	0.00
286	23.83	0.07	0.025	0.087	0.022	0.00
287	23.92	0.07	0.025	0.087	0.022	0.00
288	24.00	0.07	0.025	0.087	0.022	0.00
	Sum =	100.0			Sum =	11.5

Flood volume = Effective rainfall 0.96(In)
times area 30.4(Ac.)/[(In)/(Ft.)] = 2.4(Ac.Ft)
Total soil loss = 2.12(In)
Total soil loss = 5.368(Ac.Ft)
Total rainfall = 3.07(In)
Flood volume = 105634.3 Cubic Feet
Total soil loss = 233849.6 Cubic Feet

Peak flow rate of this hydrograph = 8.185(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q	|	|	|	|
0+10	0.0003	0.04	Q	|	|	|	|
0+15	0.0007	0.06	Q	|	|	|	|
0+20	0.0012	0.07	Q	|	|	|	|
0+25	0.0018	0.09	Q	|	|	|	|
0+30	0.0026	0.10	Q	|	|	|	|
0+35	0.0033	0.11	Q	|	|	|	|
0+40	0.0041	0.11	Q	|	|	|	|
0+45	0.0048	0.11	Q	|	|	|	|
0+50	0.0056	0.12	Q	|	|	|	|
0+55	0.0065	0.13	Q	|	|	|	|
1+ 0	0.0075	0.14	Q	|	|	|	|
1+ 5	0.0085	0.14	Q	|	|	|	|
1+10	0.0094	0.13	Q	|	|	|	|
1+15	0.0102	0.12	Q	|	|	|	|
1+20	0.0110	0.12	Q	|	|	|	|
1+25	0.0118	0.11	Q	|	|	|	|
1+30	0.0126	0.11	Q	|	|	|	|
1+35	0.0134	0.11	Q	|	|	|	|
1+40	0.0142	0.11	Q	|	|	|	|
1+45	0.0150	0.11	Q	|	|	|	|
1+50	0.0158	0.12	Q	|	|	|	|
1+55	0.0167	0.13	Q	|	|	|	|
2+ 0	0.0177	0.14	Q	|	|	|	|
2+ 5	0.0187	0.15	Q	|	|	|	|
2+10	0.0197	0.15	Q	|	|	|	|
2+15	0.0207	0.15	Q	|	|	|	|
2+20	0.0218	0.15	Q	|	|	|	|

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2+25       0.0228      0.15  Q          |          |          |          |
2+30       0.0238      0.15  Q          |          |          |          |
2+35       0.0249      0.15  Q          |          |          |          |
2+40       0.0261      0.17  Q          |          |          |          |
2+45       0.0273      0.18  Q          |          |          |          |
2+50       0.0286      0.18  Q          |          |          |          |
2+55       0.0299      0.19  Q          |          |          |          |
3+ 0       0.0312      0.19  Q          |          |          |          |
3+ 5       0.0325      0.19  Q          |          |          |          |
3+10       0.0338      0.19  Q          |          |          |          |
3+15       0.0351      0.19  Q          |          |          |          |
3+20       0.0364      0.19  Q          |          |          |          |
3+25       0.0377      0.19  Q          |          |          |          |
3+30       0.0390      0.19  Q          |          |          |          |
3+35       0.0403      0.19  Q          |          |          |          |
3+40       0.0416      0.19  Q          |          |          |          |
3+45       0.0429      0.19  Q          |          |          |          |
3+50       0.0442      0.19  Q          |          |          |          |
3+55       0.0456      0.21  Q          |          |          |          |
4+ 0       0.0471      0.22  Q          |          |          |          |
4+ 5       0.0486      0.22  Q          |          |          |          |
4+10       0.0502      0.22  Q          |          |          |          |
4+15       0.0517      0.23  Q          |          |          |          |
4+20       0.0533      0.23  Q          |          |          |          |
4+25       0.0550      0.25  Q          |          |          |          |
4+30       0.0568      0.26  VQ         |          |          |          |
4+35       0.0586      0.26  VQ         |          |          |          |
4+40       0.0604      0.26  VQ         |          |          |          |
4+45       0.0622      0.26  |Q         |          |          |          |
4+50       0.0640      0.27  |Q         |          |          |          |
4+55       0.0660      0.28  |Q         |          |          |          |
5+ 0       0.0680      0.29  |Q         |          |          |          |
5+ 5       0.0700      0.29  |Q         |          |          |          |
5+10       0.0718      0.26  |Q         |          |          |          |
5+15       0.0735      0.24  QV         |          |          |          |
5+20       0.0751      0.24  QV         |          |          |          |
5+25       0.0768      0.25  QV         |          |          |          |
5+30       0.0786      0.26  |Q         |          |          |          |
5+35       0.0804      0.26  |Q         |          |          |          |
5+40       0.0824      0.28  |Q         |          |          |          |
5+45       0.0844      0.29  |Q         |          |          |          |
5+50       0.0864      0.30  |Q         |          |          |          |
5+55       0.0885      0.30  |Q         |          |          |          |
6+ 0       0.0906      0.30  |Q         |          |          |          |
6+ 5       0.0927      0.30  |Q         |          |          |          |
6+10       0.0949      0.32  |Q         |          |          |          |
6+15       0.0971      0.33  |Q         |          |          |          |
6+20       0.0995      0.34  |Q         |          |          |          |
6+25       0.1018      0.34  |Q         |          |          |          |
6+30       0.1041      0.34  |Q         |          |          |          |
6+35       0.1065      0.34  |Q         |          |          |          |
6+40       0.1089      0.36  |Q         |          |          |          |
6+45       0.1115      0.37  |Q         |          |          |          |
6+50       0.1141      0.37  |Q         |          |          |          |
6+55       0.1166      0.38  |Q         |          |          |          |
7+ 0       0.1192      0.38  |Q         |          |          |          |
7+ 5       0.1218      0.38  |QV        |          |          |          |
7+10       0.1244      0.38  |QV        |          |          |          |
7+15       0.1270      0.38  |QV        |          |          |          |
7+20       0.1296      0.38  |QV        |          |          |          |
7+25       0.1324      0.40  |QV        |          |          |          |
7+30       0.1352      0.41  |QV        |          |          |          |
7+35       0.1380      0.41  |QV        |          |          |          |
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 7+40       0.1410      0.43  |QV       |         |         |         |
 7+45       0.1441      0.44  |QV       |         |         |         |
 7+50       0.1472      0.45  |QV       |         |         |         |
 7+55       0.1504      0.47  |QV       |         |         |         |
 8+ 0       0.1537      0.48  |QV       |         |         |         |
 8+ 5       0.1571      0.49  |QV       |         |         |         |
 8+10       0.1607      0.53  | Q       |         |         |         |
 8+15       0.1645      0.55  | Q       |         |         |         |
 8+20       0.1684      0.56  | Q       |         |         |         |
 8+25       0.1722      0.56  | Q       |         |         |         |
 8+30       0.1761      0.56  | Q       |         |         |         |
 8+35       0.1800      0.57  | Q       |         |         |         |
 8+40       0.1841      0.58  | QV      |         |         |         |
 8+45       0.1882      0.60  | QV      |         |         |         |
 8+50       0.1922      0.58  | QV      |         |         |         |
 8+55       0.1956      0.50  | QV      |         |         |         |
 9+ 0       0.1988      0.46  |Q V      |         |         |         |
 9+ 5       0.2024      0.52  | QV      |         |         |         |
 9+10       0.2084      0.87  |  Q      |         |         |         |
 9+15       0.2160      1.10  |  VQ     |         |         |         |
 9+20       0.2245      1.23  |  VQ     |         |         |         |
 9+25       0.2346      1.47  |  V Q    |         |         |         |
 9+30       0.2457      1.62  |   V Q   |         |         |         |
 9+35       0.2576      1.72  |   V Q   |         |         |         |
 9+40       0.2709      1.94  |   V  Q  |         |         |         |
 9+45       0.2853      2.08  |   V   Q |         |         |         |
 9+50       0.3003      2.19  |   V   Q |         |         |         |
 9+55       0.3169      2.40  |    V   Q|         |         |         |
10+ 0       0.3344      2.54  |    V    Q         |         |         |
10+ 5       0.3510      2.41  |    V   Q|         |         |         |
10+10       0.3599      1.29  |    Q    |         |         |         |
10+15       0.3641      0.61  | Q   V   |         |         |         |
10+20       0.3667      0.37  |Q    V   |         |         |         |
10+25       0.3684      0.25  |Q    V   |         |         |         |
10+30       0.3698      0.21  Q     V   |         |         |         |
10+35       0.3723      0.36  |Q    V   |         |         |         |
10+40       0.3806      1.20  |   Q V   |         |         |         |
10+45       0.3925      1.73  |     Q   |         |         |         |
10+50       0.4060      1.95  |     VQ  |         |         |         |
10+55       0.4203      2.08  |     V Q |         |         |         |
11+ 0       0.4352      2.16  |      VQ |         |         |         |
11+ 5       0.4501      2.17  |      VQ |         |         |         |
11+10       0.4642      2.04  |      VQ |         |         |         |
11+15       0.4778      1.98  |      Q  |         |         |         |
11+20       0.4913      1.97  |      QV |         |         |         |
11+25       0.5049      1.97  |      QV |         |         |         |
11+30       0.5186      1.99  |      QV |         |         |         |
11+35       0.5320      1.95  |      QV |         |         |         |
11+40       0.5433      1.64  |     Q V |         |         |         |
11+45       0.5534      1.46  |    Q   V|         |         |         |
11+50       0.5632      1.43  |    Q   V|         |         |         |
11+55       0.5741      1.58  |     Q  V|         |         |         |
12+ 0       0.5858      1.69  |     Q  V|         |         |         |
12+ 5       0.5992      1.96  |      Q V|         |         |         |
12+10       0.6210      3.16  |         V Q       |         |         |
12+15       0.6480      3.91  |         V    Q    |         |         |
12+20       0.6772      4.24  |         |V    Q   |         |         |
12+25       0.7088      4.59  |         |V      Q |         |         |
12+30       0.7417      4.78  |         | V      Q|         |         |
12+35       0.7757      4.93  |         | V      Q|         |         |
12+40       0.8124      5.33  |         |  V      |Q        |         |
12+45       0.8508      5.58  |         |   V     | Q       |         |
12+50       0.8902      5.72  |         |   V     | Q       |         |
```

```
12+55       0.9312      5.95  |         |    V    |  Q      |         |
13+ 0       0.9732      6.10  |         |     V   |   Q     |         |
13+ 5       1.0167      6.32  |         |     V   |    Q    |         |
13+10       1.0663      7.20  |         |      V  |       Q |         |
13+15       1.1197      7.75  |         |       V |         |Q        |
13+20       1.1747      7.98  |         |        V|         |Q        |
13+25       1.2305      8.11  |         |         V         | Q       |
13+30       1.2869      8.19  |         |         |V        | Q       |
13+35       1.3413      7.90  |         |         | V       |Q        |
13+40       1.3834      6.11  |         |         | V Q     |         |
13+45       1.4179      5.01  |         |         Q  V      |         |
13+50       1.4496      4.60  |         |       Q |  V      |         |
13+55       1.4798      4.39  |         |      Q  |   V     |         |
14+ 0       1.5094      4.30  |         |      Q  |   V     |         |
14+ 5       1.5398      4.41  |         |      Q  |    V    |         |
14+10       1.5747      5.07  |         |         Q    V    |         |
14+15       1.6125      5.49  |         |         |Q    V   |         |
14+20       1.6513      5.63  |         |         | Q    V  |         |
14+25       1.6896      5.57  |         |         | Q    V  |         |
14+30       1.7277      5.53  |         |         | Q     V |         |
14+35       1.7658      5.53  |         |         | Q      V|         |
14+40       1.8039      5.53  |         |         | Q      V|         |
14+45       1.8421      5.55  |         |         | Q       V         |
14+50       1.8803      5.55  |         |         | Q       |V        |
14+55       1.9175      5.40  |         |         |Q        |V        |
15+ 0       1.9541      5.32  |         |         |Q        | V       |
15+ 5       1.9904      5.27  |         |         |Q        | V       |
15+10       2.0255      5.10  |         |         Q         |  V      |
15+15       2.0600      5.01  |         |         Q         |  V      |
15+20       2.0942      4.96  |         |        Q|         |   V     |
15+25       2.1272      4.79  |         |        Q|         |    V    |
15+30       2.1595      4.70  |         |       Q |         |    V    |
15+35       2.1909      4.56  |         |       Q |         |     V   |
15+40       2.2177      3.89  |         |    Q    |         |     V   |
15+45       2.2417      3.49  |         |  Q      |         |     V   |
15+50       2.2647      3.34  |         |  Q      |         |      V  |
15+55       2.2873      3.28  |         |  Q      |         |      V  |
16+ 0       2.3097      3.26  |         |  Q      |         |       V |
16+ 5       2.3305      3.02  |         | Q       |         |       V |
16+10       2.3418      1.65  |      Q  |         |         |       V |
16+15       2.3473      0.80  |  Q      |         |         |       V |
16+20       2.3506      0.47  |Q        |         |         |       V |
16+25       2.3526      0.30  |Q        |         |         |       V |
16+30       2.3541      0.22  Q         |         |         |       V |
16+35       2.3554      0.19  Q         |         |         |       V |
16+40       2.3565      0.15  Q         |         |         |       V |
16+45       2.3573      0.13  Q         |         |         |       V |
16+50       2.3581      0.12  Q         |         |         |       V |
16+55       2.3589      0.11  Q         |         |         |       V |
17+ 0       2.3597      0.11  Q         |         |         |       V |
17+ 5       2.3605      0.12  Q         |         |         |       V |
17+10       2.3616      0.15  Q         |         |         |       V |
17+15       2.3628      0.17  Q         |         |         |       V |
17+20       2.3640      0.18  Q         |         |         |       V |
17+25       2.3653      0.18  Q         |         |         |        V|
17+30       2.3666      0.19  Q         |         |         |        V|
17+35       2.3679      0.19  Q         |         |         |        V|
17+40       2.3692      0.19  Q         |         |         |        V|
17+45       2.3705      0.19  Q         |         |         |        V|
17+50       2.3717      0.19  Q         |         |         |        V|
17+55       2.3729      0.17  Q         |         |         |        V|
18+ 0       2.3740      0.16  Q         |         |         |        V|
18+ 5       2.3751      0.15  Q         |         |         |        V|
```

18+10	2.3761	0.15	Q	|	|	|	V|
18+15	2.3772	0.15	Q	|	|	|	V|
18+20	2.3782	0.15	Q	|	|	|	V|
18+25	2.3792	0.15	Q	|	|	|	V|
18+30	2.3803	0.15	Q	|	|	|	V|
18+35	2.3813	0.15	Q	|	|	|	V|
18+40	2.3822	0.13	Q	|	|	|	V|
18+45	2.3830	0.12	Q	|	|	|	V|
18+50	2.3838	0.11	Q	|	|	|	V|
18+55	2.3845	0.10	Q	|	|	|	V|
19+ 0	2.3851	0.08	Q	|	|	|	V|
19+ 5	2.3856	0.08	Q	|	|	|	V|
19+10	2.3863	0.10	Q	|	|	|	V|
19+15	2.3870	0.11	Q	|	|	|	V|
19+20	2.3878	0.11	Q	|	|	|	V|
19+25	2.3887	0.13	Q	|	|	|	V|
19+30	2.3897	0.14	Q	|	|	|	V|
19+35	2.3907	0.14	Q	|	|	|	V|
19+40	2.3916	0.13	Q	|	|	|	V|
19+45	2.3924	0.12	Q	|	|	|	V|
19+50	2.3932	0.11	Q	|	|	|	V|
19+55	2.3938	0.10	Q	|	|	|	V|
20+ 0	2.3944	0.08	Q	|	|	|	V|
20+ 5	2.3950	0.08	Q	|	|	|	V|
20+10	2.3957	0.10	Q	|	|	|	V|
20+15	2.3964	0.11	Q	|	|	|	V|
20+20	2.3971	0.11	Q	|	|	|	V|
20+25	2.3979	0.11	Q	|	|	|	V|
20+30	2.3987	0.11	Q	|	|	|	V|
20+35	2.3995	0.11	Q	|	|	|	V|
20+40	2.4002	0.11	Q	|	|	|	V|
20+45	2.4010	0.11	Q	|	|	|	V|
20+50	2.4018	0.11	Q	|	|	|	V|
20+55	2.4024	0.09	Q	|	|	|	V|
21+ 0	2.4030	0.08	Q	|	|	|	V|
21+ 5	2.4036	0.08	Q	|	|	|	V|
21+10	2.4042	0.10	Q	|	|	|	V|
21+15	2.4050	0.11	Q	|	|	|	V|
21+20	2.4057	0.11	Q	|	|	|	V|
21+25	2.4063	0.09	Q	|	|	|	V|
21+30	2.4069	0.08	Q	|	|	|	V|
21+35	2.4075	0.08	Q	|	|	|	V|
21+40	2.4081	0.10	Q	|	|	|	V|
21+45	2.4089	0.11	Q	|	|	|	V|
21+50	2.4096	0.11	Q	|	|	|	V|
21+55	2.4102	0.09	Q	|	|	|	V|
22+ 0	2.4108	0.08	Q	|	|	|	V|
22+ 5	2.4114	0.08	Q	|	|	|	V|
22+10	2.4120	0.10	Q	|	|	|	V|
22+15	2.4128	0.11	Q	|	|	|	V|
22+20	2.4135	0.11	Q	|	|	|	V|
22+25	2.4141	0.09	Q	|	|	|	V|
22+30	2.4147	0.08	Q	|	|	|	V|
22+35	2.4152	0.08	Q	|	|	|	V|
22+40	2.4158	0.08	Q	|	|	|	V|
22+45	2.4163	0.08	Q	|	|	|	V|
22+50	2.4168	0.08	Q	|	|	|	V|
22+55	2.4173	0.08	Q	|	|	|	V|
23+ 0	2.4179	0.08	Q	|	|	|	V|
23+ 5	2.4184	0.08	Q	|	|	|	V|
23+10	2.4189	0.08	Q	|	|	|	V|
23+15	2.4194	0.08	Q	|	|	|	V|
23+20	2.4199	0.08	Q	|	|	|	V|

```
   23+25       2.4205      0.08  Q         |         |         |        V|
   23+30       2.4210      0.08  Q         |         |         |        V|
   23+35       2.4215      0.08  Q         |         |         |        V|
   23+40       2.4220      0.08  Q         |         |         |        V|
   23+45       2.4225      0.08  Q         |         |         |        V|
   23+50       2.4231      0.08  Q         |         |         |        V|
   23+55       2.4236      0.08  Q         |         |         |        V|
   24+ 0       2.4241      0.08  Q         |         |         |        V|
   24+ 5       2.4246      0.07  Q         |         |         |        V|
   24+10       2.4248      0.04  Q         |         |         |        V|
   24+15       2.4249      0.02  Q         |         |         |        V|
   24+20       2.4250      0.01  Q         |         |         |        V|
   24+25       2.4250      0.00  Q         |         |         |        V|
   24+30       2.4250      0.00  Q         |         |         |        V|
   24+35       2.4250      0.00  Q         |         |         |        V|
   24+40       2.4250      0.00  Q         |         |         |        V|
   24+45       2.4250      0.00  Q         |         |         |        V|
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/07/18 File: 27259UHeFGHJ110.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4066

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

PM #13523
MILL CREEK PROMENADE
AREA eFGHJ - Q10yr1hr (ONSITE)- Unit Hydrograph Method

Drainage Area = 24.40(Ac.) = 0.038 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 24.40(Ac.) = 0.038 Sq. Mi.
Length along longest watercourse = 1714.00(Ft.)
Length along longest watercourse measured to centroid = 857.00(Ft.)
Length along longest watercourse = 0.325 Mi.
Length along longest watercourse measured to centroid = 0.162 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 92.4154 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.083 Hr.
Lag time = 4.98 Min.
25% of lag time = 1.24 Min.
40% of lag time = 1.99 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
24.40	0.53	12.93

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
24.40	1.25	30.50

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.530(In)
Area Averaged 100-Year Rainfall = 1.250(In)

Point rain (area averaged) = 0.826(In)

Areal adjustment factor = 99.98 %
Adjusted average point rain = 0.826(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
24.400	72.00	0.000

Total Area Entered = 24.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	100.439	14.574	3.584
2	0.167	200.879	55.761	13.712
3	0.250	301.318	18.357	4.514
4	0.333	401.757	7.387	1.817
5	0.417	502.197	2.417	0.594
6	0.500	602.636	0.845	0.208
7	0.583	703.075	0.658	0.162
		Sum =	100.000	Sum= 24.591

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.337	0.173	---	0.16
2	0.17	4.70	0.466	0.173	---	0.29
3	0.25	4.70	0.466	0.173	---	0.29
4	0.33	5.10	0.506	0.173	---	0.33
5	0.42	5.80	0.575	0.173	---	0.40
6	0.50	5.90	0.585	0.173	---	0.41
7	0.58	7.10	0.704	0.173	---	0.53
8	0.67	8.70	0.862	0.173	---	0.69
9	0.75	13.20	1.308	0.173	---	1.14
10	0.83	29.70	2.944	0.173	---	2.77
11	0.92	7.70	0.763	0.173	---	0.59
12	1.00	4.00	0.396	0.173	---	0.22
Sum =		100.0			Sum =	7.8

Flood volume = Effective rainfall 0.65(In)
times area 24.4(Ac.)/[(In)/(Ft.)] = 1.3(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.352(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 57811.9 Cubic Feet
Total soil loss = 15351.3 Cubic Feet

```
 Peak flow rate of this hydrograph =     46.971(CFS)
 ---------------------------------------------------------------------
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    1 - H O U R    S T O R M
               R u n o f f     H y d r o g r a p h
 ---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

 ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
 ---------------------------------------------------------------------
  0+ 5       0.0040      0.59  Q         |         |         |         |
  0+10       0.0267      3.29  V Q       |         |         |         |
  0+15       0.0667      5.80  | V Q     |         |         |         |
  0+20       0.1137      6.82  |  V Q    |         |         |         |
  0+25       0.1684      7.95  |    VQ   |         |         |         |
  0+30       0.2320      9.23  |     VQ  |         |         |         |
  0+35       0.3024     10.23  |       QV|         |         |         |
  0+40       0.3895     12.64  |         QV        |         |         |
  0+45       0.5067     17.02  |         |  Q V    |         |         |
  0+50       0.7131     29.97  |         |         |V Q      |         |
  0+55       1.0366     46.97  |         |         |         |V     Q  |
  1+ 0       1.2022     24.06  |         |        Q|         |     V   |
  1+ 5       1.2826     11.67  |        Q|         |         |       V |
  1+10       1.3107      4.08  |  Q      |         |         |        V|
  1+15       1.3211      1.52  |Q        |         |         |        V|
  1+20       1.3260      0.70  Q         |         |         |        V|
  1+25       1.3269      0.14  Q         |         |         |        V|
  1+30       1.3272      0.04  Q         |         |         |         V
 ---------------------------------------------------------------------
```

```
      U n i t   H y d r o g r a p h   A n a l y s i s

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            Study date  01/07/18 File: 27259UHeFGHJ310.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format
--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eFGHJ - Q10yr3hr (ONSITE)- Unit Hydrograph Method
-------------------------------------------------------------------
Drainage Area =      24.40(Ac.)  =      0.038 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      24.40(Ac.)  =      0.038
Sq. Mi.
Length along longest watercourse =    1714.00(Ft.)
Length along longest watercourse measured to centroid =     857.00(Ft.)
Length along longest watercourse =      0.325 Mi.
Length along longest watercourse measured to centroid =      0.162 Mi.
Difference in elevation =      30.00(Ft.)
Slope along watercourse =     92.4154 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.083 Hr.
Lag time =     4.98 Min.
25% of lag time =     1.24 Min.
40% of lag time =     1.99 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       24.40         0.85               20.74

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       24.40         1.90               46.36

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    0.850(In)
Area Averaged 100-Year Rainfall =    1.900(In)

Point rain (area averaged) =    1.282(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.282(In)
```

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
24.400	72.00	0.000

Total Area Entered = 24.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	100.439	14.574	3.584
2	0.167	200.879	55.761	13.712
3	0.250	301.318	18.357	4.514
4	0.333	401.757	7.387	1.817
5	0.417	502.197	2.417	0.594
6	0.500	602.636	0.845	0.208
7	0.583	703.075	0.658	0.162
			Sum = 100.000	Sum= 24.591

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.200	0.173	---	0.03
2	0.17	1.30	0.200	0.173	---	0.03
3	0.25	1.10	0.169	0.173	0.152	0.02
4	0.33	1.50	0.231	0.173	---	0.06
5	0.42	1.50	0.231	0.173	---	0.06
6	0.50	1.80	0.277	0.173	---	0.10
7	0.58	1.50	0.231	0.173	---	0.06
8	0.67	1.80	0.277	0.173	---	0.10
9	0.75	1.80	0.277	0.173	---	0.10
10	0.83	1.50	0.231	0.173	---	0.06
11	0.92	1.60	0.246	0.173	---	0.07
12	1.00	1.80	0.277	0.173	---	0.10
13	1.08	2.20	0.338	0.173	---	0.17
14	1.17	2.20	0.338	0.173	---	0.17
15	1.25	2.20	0.338	0.173	---	0.17
16	1.33	2.00	0.308	0.173	---	0.13
17	1.42	2.60	0.400	0.173	---	0.23
18	1.50	2.70	0.415	0.173	---	0.24
19	1.58	2.40	0.369	0.173	---	0.20
20	1.67	2.70	0.415	0.173	---	0.24
21	1.75	3.30	0.508	0.173	---	0.33
22	1.83	3.10	0.477	0.173	---	0.30
23	1.92	2.90	0.446	0.173	---	0.27
24	2.00	3.00	0.461	0.173	---	0.29
25	2.08	3.10	0.477	0.173	---	0.30

26	2.17	4.20	0.646	0.173	---	0.47
27	2.25	5.00	0.769	0.173	---	0.60
28	2.33	3.50	0.538	0.173	---	0.37
29	2.42	6.80	1.046	0.173	---	0.87
30	2.50	7.30	1.123	0.173	---	0.95
31	2.58	8.20	1.261	0.173	---	1.09
32	2.67	5.90	0.908	0.173	---	0.73
33	2.75	2.00	0.308	0.173	---	0.13
34	2.83	1.80	0.277	0.173	---	0.10
35	2.92	1.80	0.277	0.173	---	0.10
36	3.00	0.60	0.092	0.173	0.083	0.01
Sum =		100.0			Sum =	9.3

Flood volume = Effective rainfall 0.77(In)
times area 24.4(Ac.)/[(In)/(Ft.)] = 1.6(Ac.Ft)
Total soil loss = 0.51(In)
Total soil loss = 1.038(Ac.Ft)
Total rainfall = 1.28(In)
Flood volume = 68302.8 Cubic Feet
Total soil loss = 45232.4 Cubic Feet

Peak flow rate of this hydrograph = 23.852(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

```
Time(h+m) Volume Ac.Ft   Q(CFS)  0         7.5      15.0      22.5      30.0
-----------------------------------------------------------------------
  0+ 5       0.0007      0.10  Q         |         |         |         |
  0+10       0.0038      0.46  Q         |         |         |         |
  0+15       0.0076      0.55  Q         |         |         |         |
  0+20       0.0118      0.61  Q         |         |         |         |
  0+25       0.0196      1.13  VQ        |         |         |         |
  0+30       0.0297      1.47  VQ        |         |         |         |
  0+35       0.0436      2.01  |VQ       |         |         |         |
  0+40       0.0558      1.77  |VQ       |         |         |         |
  0+45       0.0715      2.29  |V Q      |         |         |         |
  0+50       0.0872      2.28  | VQ      |         |         |         |
  0+55       0.0994      1.77  | Q       |         |         |         |
  1+ 0       0.1126      1.91  | Q       |         |         |         |
  1+ 5       0.1300      2.54  |  Q      |         |         |         |
  1+10       0.1544      3.53  |  VQ     |         |         |         |
  1+15       0.1810      3.86  |   VQ    |         |         |         |
  1+20       0.2077      3.88  |    Q    |         |         |         |
  1+25       0.2341      3.83  |    Q    |         |         |         |
  1+30       0.2687      5.03  |     Q   |         |         |         |
  1+35       0.3062      5.45  |      Q  |         |         |         |
  1+40       0.3421      5.20  |     Q V |         |         |         |
  1+45       0.3836      6.03  |       QV|         |         |         |
  1+50       0.4341      7.34  |        Q|V        |         |         |
  1+55       0.4844      7.30  |        Q| V       |         |         |
  2+ 0       0.5324      6.98  |        Q|  V      |         |         |
  2+ 5       0.5814      7.11  |        Q|   V     |         |         |
  2+10       0.6361      7.95  |         Q     V   |         |         |
  2+15       0.7104     10.80  |         |   Q   V |         |         |
  2+20       0.7962     12.45  |         |     Q   V         |         |
  2+25       0.8786     11.97  |         |    Q    | V       |         |
  2+30       1.0060     18.50  |         |         |   QV    |         |
  2+35       1.1578     22.04  |         |         |        Q|         |
  2+40       1.3220     23.85  |         |         |         |Q V      |
```

```
    2+45       1.4452     17.89  |         |         |  Q      |     V   |
    2+50       1.5025      8.31  |         |Q        |         |       V |
    2+55       1.5350      4.72  |     Q   |         |         |        V|
    3+ 0       1.5555      2.98  |  Q      |         |         |        V|
    3+ 5       1.5637      1.19  |Q        |         |         |        V|
    3+10       1.5667      0.44  Q         |         |         |        V|
    3+15       1.5676      0.12  Q         |         |         |        V|
    3+20       1.5679      0.04  Q         |         |         |        V|
    3+25       1.5680      0.02  Q         |         |         |        V|
    3+30       1.5680      0.00  Q         |         |         |         V
-----------------------------------------------------------------------
```

```
      U n i t   H y d r o g r a p h   A n a l y s i s

      Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
            Study date  01/07/18 File: 27259UHeFGHJ610.out

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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format
--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eFGHJ - Q10yr6hr (ONSITE)- Unit Hydrograph Method
-------------------------------------------------------------------
Drainage Area =      24.40(Ac.)  =      0.038 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      24.40(Ac.)  =      0.038
Sq. Mi.
Length along longest watercourse =    1714.00(Ft.)
Length along longest watercourse measured to centroid =     857.00(Ft.)
Length along longest watercourse =      0.325 Mi.
Length along longest watercourse measured to centroid =      0.162 Mi.
Difference in elevation =      30.00(Ft.)
Slope along watercourse =     92.4154 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.083 Hr.
Lag time =     4.98 Min.
25% of lag time =     1.24 Min.
40% of lag time =     1.99 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       24.40         1.30               31.72

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       24.40         2.75               67.10

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.300(In)
Area Averaged 100-Year Rainfall =    2.750(In)

Point rain (area averaged) =    1.897(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.896(In)
```

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
24.400	72.00	0.000

Total Area Entered = 24.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	100.439	14.574	3.584
2	0.167	200.879	55.761	13.712
3	0.250	301.318	18.357	4.514
4	0.333	401.757	7.387	1.817
5	0.417	502.197	2.417	0.594
6	0.500	602.636	0.845	0.208
7	0.583	703.075	0.658	0.162
			Sum = 100.000	Sum= 24.591

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.114	0.173	0.102	0.01
2	0.17	0.60	0.137	0.173	0.123	0.01
3	0.25	0.60	0.137	0.173	0.123	0.01
4	0.33	0.60	0.137	0.173	0.123	0.01
5	0.42	0.60	0.137	0.173	0.123	0.01
6	0.50	0.70	0.159	0.173	0.143	0.02
7	0.58	0.70	0.159	0.173	0.143	0.02
8	0.67	0.70	0.159	0.173	0.143	0.02
9	0.75	0.70	0.159	0.173	0.143	0.02
10	0.83	0.70	0.159	0.173	0.143	0.02
11	0.92	0.70	0.159	0.173	0.143	0.02
12	1.00	0.80	0.182	0.173	---	0.01
13	1.08	0.80	0.182	0.173	---	0.01
14	1.17	0.80	0.182	0.173	---	0.01
15	1.25	0.80	0.182	0.173	---	0.01
16	1.33	0.80	0.182	0.173	---	0.01
17	1.42	0.80	0.182	0.173	---	0.01
18	1.50	0.80	0.182	0.173	---	0.01
19	1.58	0.80	0.182	0.173	---	0.01
20	1.67	0.80	0.182	0.173	---	0.01
21	1.75	0.80	0.182	0.173	---	0.01
22	1.83	0.80	0.182	0.173	---	0.01
23	1.92	0.80	0.182	0.173	---	0.01
24	2.00	0.90	0.205	0.173	---	0.03
25	2.08	0.80	0.182	0.173	---	0.01

26	2.17	0.90	0.205	0.173	---	0.03
27	2.25	0.90	0.205	0.173	---	0.03
28	2.33	0.90	0.205	0.173	---	0.03
29	2.42	0.90	0.205	0.173	---	0.03
30	2.50	0.90	0.205	0.173	---	0.03
31	2.58	0.90	0.205	0.173	---	0.03
32	2.67	0.90	0.205	0.173	---	0.03
33	2.75	1.00	0.228	0.173	---	0.05
34	2.83	1.00	0.228	0.173	---	0.05
35	2.92	1.00	0.228	0.173	---	0.05
36	3.00	1.00	0.228	0.173	---	0.05
37	3.08	1.00	0.228	0.173	---	0.05
38	3.17	1.10	0.250	0.173	---	0.08
39	3.25	1.10	0.250	0.173	---	0.08
40	3.33	1.10	0.250	0.173	---	0.08
41	3.42	1.20	0.273	0.173	---	0.10
42	3.50	1.30	0.296	0.173	---	0.12
43	3.58	1.40	0.319	0.173	---	0.15
44	3.67	1.40	0.319	0.173	---	0.15
45	3.75	1.50	0.341	0.173	---	0.17
46	3.83	1.50	0.341	0.173	---	0.17
47	3.92	1.60	0.364	0.173	---	0.19
48	4.00	1.60	0.364	0.173	---	0.19
49	4.08	1.70	0.387	0.173	---	0.21
50	4.17	1.80	0.410	0.173	---	0.24
51	4.25	1.90	0.432	0.173	---	0.26
52	4.33	2.00	0.455	0.173	---	0.28
53	4.42	2.10	0.478	0.173	---	0.30
54	4.50	2.10	0.478	0.173	---	0.30
55	4.58	2.20	0.501	0.173	---	0.33
56	4.67	2.30	0.523	0.173	---	0.35
57	4.75	2.40	0.546	0.173	---	0.37
58	4.83	2.40	0.546	0.173	---	0.37
59	4.92	2.50	0.569	0.173	---	0.40
60	5.00	2.60	0.592	0.173	---	0.42
61	5.08	3.10	0.705	0.173	---	0.53
62	5.17	3.60	0.819	0.173	---	0.65
63	5.25	3.90	0.888	0.173	---	0.71
64	5.33	4.20	0.956	0.173	---	0.78
65	5.42	4.70	1.070	0.173	---	0.90
66	5.50	5.60	1.274	0.173	---	1.10
67	5.58	1.90	0.432	0.173	---	0.26
68	5.67	0.90	0.205	0.173	---	0.03
69	5.75	0.60	0.137	0.173	0.123	0.01
70	5.83	0.50	0.114	0.173	0.102	0.01
71	5.92	0.30	0.068	0.173	0.061	0.01
72	6.00	0.20	0.046	0.173	0.041	0.00
Sum =		100.0			Sum =	11.1

Flood volume = Effective rainfall 0.92(In)
times area 24.4(Ac.)/[(In)/(Ft.)] = 1.9(Ac.Ft)
Total soil loss = 0.97(In)
Total soil loss = 1.976(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 81896.0 Cubic Feet
Total soil loss = 86070.4 Cubic Feet

Peak flow rate of this hydrograph = 22.150(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

```
     ----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
----------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0017      0.21  Q         |         |         |         |
  0+15       0.0037      0.29  Q         |         |         |         |
  0+20       0.0059      0.32  Q         |         |         |         |
  0+25       0.0081      0.33  Q         |         |         |         |
  0+30       0.0105      0.34  Q         |         |         |         |
  0+35       0.0131      0.37  Q         |         |         |         |
  0+40       0.0157      0.39  Q         |         |         |         |
  0+45       0.0184      0.39  Q         |         |         |         |
  0+50       0.0211      0.39  Q         |         |         |         |
  0+55       0.0238      0.39  Q         |         |         |         |
  1+ 0       0.0263      0.37  Q         |         |         |         |
  1+ 5       0.0282      0.27  Q         |         |         |         |
  1+10       0.0298      0.23  Q         |         |         |         |
  1+15       0.0313      0.22  Q         |         |         |         |
  1+20       0.0328      0.22  Q         |         |         |         |
  1+25       0.0343      0.22  Q         |         |         |         |
  1+30       0.0358      0.21  Q         |         |         |         |
  1+35       0.0373      0.21  Q         |         |         |         |
  1+40       0.0387      0.21  Q         |         |         |         |
  1+45       0.0402      0.21  Q         |         |         |         |
  1+50       0.0417      0.21  Q         |         |         |         |
  1+55       0.0432      0.21  Q         |         |         |         |
  2+ 0       0.0452      0.30  Q         |         |         |         |
  2+ 5       0.0488      0.53  QV        |         |         |         |
  2+10       0.0516      0.40  QV        |         |         |         |
  2+15       0.0561      0.65  QV        |         |         |         |
  2+20       0.0611      0.72  QV        |         |         |         |
  2+25       0.0663      0.76  |Q        |         |         |         |
  2+30       0.0716      0.77  |Q        |         |         |         |
  2+35       0.0769      0.77  |Q        |         |         |         |
  2+40       0.0822      0.77  |Q        |         |         |         |
  2+45       0.0881      0.86  |Q        |         |         |         |
  2+50       0.0962      1.17  |QV       |         |         |         |
  2+55       0.1049      1.27  |QV       |         |         |         |
  3+ 0       0.1140      1.31  |QV       |         |         |         |
  3+ 5       0.1231      1.33  |QV       |         |         |         |
  3+10       0.1328      1.41  |QV       |         |         |         |
  3+15       0.1447      1.73  | QV      |         |         |         |
  3+20       0.1573      1.83  | QV      |         |         |         |
  3+25       0.1708      1.95  | QV      |         |         |         |
  3+30       0.1871      2.36  |  Q      |         |         |         |
  3+35       0.2068      2.86  |  QV     |         |         |         |
  3+40       0.2297      3.32  |   Q     |         |         |         |
  3+45       0.2542      3.56  |   QV    |         |         |         |
  3+50       0.2813      3.93  |    Q    |         |         |         |
  3+55       0.3098      4.14  |    QV   |         |         |         |
  4+ 0       0.3408      4.50  |     QV  |         |         |         |
  4+ 5       0.3732      4.70  |     QV  |         |         |         |
  4+10       0.4086      5.14  |     Q V |         |         |         |
  4+15       0.4476      5.66  |      Q V|         |         |         |
  4+20       0.4903      6.20  |       Q V         |         |         |
  4+25       0.5368      6.76  |        Q|V        |         |         |
  4+30       0.5866      7.23  |        Q| V       |         |         |
  4+35       0.6381      7.48  |        Q|  V      |         |         |
  4+40       0.6928      7.93  |         Q   V     |         |         |
  4+45       0.7510      8.45  |         |Q   V    |         |         |
  4+50       0.8124      8.92  |         |Q     V  |         |         |
  4+55       0.8755      9.16  |         | Q     V |         |         |
```

```
    5+ 0       0.9417      9.61  |         | Q       V         |         |
    5+ 5       1.0137     10.46  |         |  Q      |V        |         |
    5+10       1.1004     12.58  |         |     Q   |  V      |         |
    5+15       1.2034     14.96  |         |        Q|    V    |         |
    5+20       1.3197     16.88  |         |         | Q     V |         |
    5+25       1.4492     18.82  |         |         |    Q    V         |
    5+30       1.5983     21.64  |         |         |       Q |   V     |
    5+35       1.7508     22.15  |         |         |        Q|      V  |
    5+40       1.8265     10.99  |         |   Q     |         |       V |
    5+45       1.8572      4.46  |    Q    |         |         |        V|
    5+50       1.8697      1.81  | Q       |         |         |        V|
    5+55       1.8754      0.83  |Q        |         |         |        V|
    6+ 0       1.8784      0.44  Q         |         |         |        V|
    6+ 5       1.8796      0.17  Q         |         |         |        V|
    6+10       1.8799      0.05  Q         |         |         |        V|
    6+15       1.8800      0.02  Q         |         |         |        V|
    6+20       1.8801      0.01  Q         |         |         |        V|
    6+25       1.8801      0.00  Q         |         |         |        V|
    6+30       1.8801      0.00  Q         |         |         |         V
-----------------------------------------------------------------------
```

```
      U n i t   H y d r o g r a p h   A n a l y s i s

      Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
            Study date  01/07/18 File: 27259UHeFGHJ2410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4066

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format
--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA eFGHJ - Q10yr24hr (ONSITE)- Unit Hydrograph Method
-------------------------------------------------------------------
Drainage Area =      24.40(Ac.)  =      0.038 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      24.40(Ac.)  =      0.038
Sq. Mi.
Length along longest watercourse =    1714.00(Ft.)
Length along longest watercourse measured to centroid =     857.00(Ft.)
Length along longest watercourse =      0.325 Mi.
Length along longest watercourse measured to centroid =      0.162 Mi.
Difference in elevation =      30.00(Ft.)
Slope along watercourse =     92.4154 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.083 Hr.
Lag time =     4.98 Min.
25% of lag time =     1.24 Min.
40% of lag time =     1.99 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       24.40         1.90               46.36

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       24.40         4.75              115.90

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.900(In)
Area Averaged 100-Year Rainfall =    4.750(In)

Point rain (area averaged) =    3.073(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    3.072(In)
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Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
24.400	72.00	0.000

Total Area Entered = 24.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
72.0	86.2	0.173	0.000	0.173	1.000	0.173
					Sum (F) =	0.173

Area averaged mean soil loss (F) (In/Hr) = 0.173
Minimum soil loss rate ((In/Hr)) = 0.087
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	100.439	14.574	3.584
2	0.167	200.879	55.761	13.712
3	0.250	301.318	18.357	4.514
4	0.333	401.757	7.387	1.817
5	0.417	502.197	2.417	0.594
6	0.500	602.636	0.845	0.208
7	0.583	703.075	0.658	0.162
			Sum = 100.000	Sum= 24.591

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.025	0.307	0.022	0.00
2	0.17	0.07	0.025	0.306	0.022	0.00
3	0.25	0.07	0.025	0.305	0.022	0.00
4	0.33	0.10	0.037	0.304	0.033	0.00
5	0.42	0.10	0.037	0.303	0.033	0.00
6	0.50	0.10	0.037	0.301	0.033	0.00
7	0.58	0.10	0.037	0.300	0.033	0.00
8	0.67	0.10	0.037	0.299	0.033	0.00
9	0.75	0.10	0.037	0.298	0.033	0.00
10	0.83	0.13	0.049	0.297	0.044	0.00
11	0.92	0.13	0.049	0.295	0.044	0.00
12	1.00	0.13	0.049	0.294	0.044	0.00
13	1.08	0.10	0.037	0.293	0.033	0.00
14	1.17	0.10	0.037	0.292	0.033	0.00
15	1.25	0.10	0.037	0.291	0.033	0.00
16	1.33	0.10	0.037	0.290	0.033	0.00
17	1.42	0.10	0.037	0.289	0.033	0.00
18	1.50	0.10	0.037	0.287	0.033	0.00
19	1.58	0.10	0.037	0.286	0.033	0.00
20	1.67	0.10	0.037	0.285	0.033	0.00
21	1.75	0.10	0.037	0.284	0.033	0.00
22	1.83	0.13	0.049	0.283	0.044	0.00
23	1.92	0.13	0.049	0.282	0.044	0.00
24	2.00	0.13	0.049	0.281	0.044	0.00
25	2.08	0.13	0.049	0.279	0.044	0.00

26	2.17	0.13	0.049	0.278	0.044	0.00
27	2.25	0.13	0.049	0.277	0.044	0.00
28	2.33	0.13	0.049	0.276	0.044	0.00
29	2.42	0.13	0.049	0.275	0.044	0.00
30	2.50	0.13	0.049	0.274	0.044	0.00
31	2.58	0.17	0.061	0.273	0.055	0.01
32	2.67	0.17	0.061	0.271	0.055	0.01
33	2.75	0.17	0.061	0.270	0.055	0.01
34	2.83	0.17	0.061	0.269	0.055	0.01
35	2.92	0.17	0.061	0.268	0.055	0.01
36	3.00	0.17	0.061	0.267	0.055	0.01
37	3.08	0.17	0.061	0.266	0.055	0.01
38	3.17	0.17	0.061	0.265	0.055	0.01
39	3.25	0.17	0.061	0.264	0.055	0.01
40	3.33	0.17	0.061	0.263	0.055	0.01
41	3.42	0.17	0.061	0.262	0.055	0.01
42	3.50	0.17	0.061	0.260	0.055	0.01
43	3.58	0.17	0.061	0.259	0.055	0.01
44	3.67	0.17	0.061	0.258	0.055	0.01
45	3.75	0.17	0.061	0.257	0.055	0.01
46	3.83	0.20	0.074	0.256	0.066	0.01
47	3.92	0.20	0.074	0.255	0.066	0.01
48	4.00	0.20	0.074	0.254	0.066	0.01
49	4.08	0.20	0.074	0.253	0.066	0.01
50	4.17	0.20	0.074	0.252	0.066	0.01
51	4.25	0.20	0.074	0.251	0.066	0.01
52	4.33	0.23	0.086	0.250	0.077	0.01
53	4.42	0.23	0.086	0.249	0.077	0.01
54	4.50	0.23	0.086	0.248	0.077	0.01
55	4.58	0.23	0.086	0.246	0.077	0.01
56	4.67	0.23	0.086	0.245	0.077	0.01
57	4.75	0.23	0.086	0.244	0.077	0.01
58	4.83	0.27	0.098	0.243	0.088	0.01
59	4.92	0.27	0.098	0.242	0.088	0.01
60	5.00	0.27	0.098	0.241	0.088	0.01
61	5.08	0.20	0.074	0.240	0.066	0.01
62	5.17	0.20	0.074	0.239	0.066	0.01
63	5.25	0.20	0.074	0.238	0.066	0.01
64	5.33	0.23	0.086	0.237	0.077	0.01
65	5.42	0.23	0.086	0.236	0.077	0.01
66	5.50	0.23	0.086	0.235	0.077	0.01
67	5.58	0.27	0.098	0.234	0.088	0.01
68	5.67	0.27	0.098	0.233	0.088	0.01
69	5.75	0.27	0.098	0.232	0.088	0.01
70	5.83	0.27	0.098	0.231	0.088	0.01
71	5.92	0.27	0.098	0.230	0.088	0.01
72	6.00	0.27	0.098	0.229	0.088	0.01
73	6.08	0.30	0.111	0.228	0.100	0.01
74	6.17	0.30	0.111	0.227	0.100	0.01
75	6.25	0.30	0.111	0.226	0.100	0.01
76	6.33	0.30	0.111	0.225	0.100	0.01
77	6.42	0.30	0.111	0.224	0.100	0.01
78	6.50	0.30	0.111	0.223	0.100	0.01
79	6.58	0.33	0.123	0.222	0.111	0.01
80	6.67	0.33	0.123	0.221	0.111	0.01
81	6.75	0.33	0.123	0.220	0.111	0.01
82	6.83	0.33	0.123	0.219	0.111	0.01
83	6.92	0.33	0.123	0.218	0.111	0.01
84	7.00	0.33	0.123	0.217	0.111	0.01
85	7.08	0.33	0.123	0.216	0.111	0.01
86	7.17	0.33	0.123	0.215	0.111	0.01
87	7.25	0.33	0.123	0.214	0.111	0.01
88	7.33	0.37	0.135	0.213	0.122	0.01

89	7.42	0.37	0.135	0.212	0.122	0.01
90	7.50	0.37	0.135	0.211	0.122	0.01
91	7.58	0.40	0.147	0.210	0.133	0.01
92	7.67	0.40	0.147	0.209	0.133	0.01
93	7.75	0.40	0.147	0.208	0.133	0.01
94	7.83	0.43	0.160	0.207	0.144	0.02
95	7.92	0.43	0.160	0.206	0.144	0.02
96	8.00	0.43	0.160	0.205	0.144	0.02
97	8.08	0.50	0.184	0.204	0.166	0.02
98	8.17	0.50	0.184	0.203	0.166	0.02
99	8.25	0.50	0.184	0.202	0.166	0.02
100	8.33	0.50	0.184	0.201	0.166	0.02
101	8.42	0.50	0.184	0.200	0.166	0.02
102	8.50	0.50	0.184	0.199	0.166	0.02
103	8.58	0.53	0.197	0.199	0.177	0.02
104	8.67	0.53	0.197	0.198	0.177	0.02
105	8.75	0.53	0.197	0.197	0.177	0.02
106	8.83	0.57	0.209	0.196	---	0.01
107	8.92	0.57	0.209	0.195	---	0.01
108	9.00	0.57	0.209	0.194	---	0.02
109	9.08	0.63	0.233	0.193	---	0.04
110	9.17	0.63	0.233	0.192	---	0.04
111	9.25	0.63	0.233	0.191	---	0.04
112	9.33	0.67	0.246	0.190	---	0.06
113	9.42	0.67	0.246	0.189	---	0.06
114	9.50	0.67	0.246	0.188	---	0.06
115	9.58	0.70	0.258	0.187	---	0.07
116	9.67	0.70	0.258	0.187	---	0.07
117	9.75	0.70	0.258	0.186	---	0.07
118	9.83	0.73	0.270	0.185	---	0.09
119	9.92	0.73	0.270	0.184	---	0.09
120	10.00	0.73	0.270	0.183	---	0.09
121	10.08	0.50	0.184	0.182	---	0.00
122	10.17	0.50	0.184	0.181	---	0.00
123	10.25	0.50	0.184	0.180	---	0.00
124	10.33	0.50	0.184	0.180	---	0.00
125	10.42	0.50	0.184	0.179	---	0.01
126	10.50	0.50	0.184	0.178	---	0.01
127	10.58	0.67	0.246	0.177	---	0.07
128	10.67	0.67	0.246	0.176	---	0.07
129	10.75	0.67	0.246	0.175	---	0.07
130	10.83	0.67	0.246	0.174	---	0.07
131	10.92	0.67	0.246	0.173	---	0.07
132	11.00	0.67	0.246	0.173	---	0.07
133	11.08	0.63	0.233	0.172	---	0.06
134	11.17	0.63	0.233	0.171	---	0.06
135	11.25	0.63	0.233	0.170	---	0.06
136	11.33	0.63	0.233	0.169	---	0.06
137	11.42	0.63	0.233	0.168	---	0.07
138	11.50	0.63	0.233	0.168	---	0.07
139	11.58	0.57	0.209	0.167	---	0.04
140	11.67	0.57	0.209	0.166	---	0.04
141	11.75	0.57	0.209	0.165	---	0.04
142	11.83	0.60	0.221	0.164	---	0.06
143	11.92	0.60	0.221	0.163	---	0.06
144	12.00	0.60	0.221	0.163	---	0.06
145	12.08	0.83	0.307	0.162	---	0.15
146	12.17	0.83	0.307	0.161	---	0.15
147	12.25	0.83	0.307	0.160	---	0.15
148	12.33	0.87	0.320	0.159	---	0.16
149	12.42	0.87	0.320	0.159	---	0.16
150	12.50	0.87	0.320	0.158	---	0.16
151	12.58	0.93	0.344	0.157	---	0.19

152	12.67	0.93	0.344	0.156	---	0.19
153	12.75	0.93	0.344	0.155	---	0.19
154	12.83	0.97	0.356	0.155	---	0.20
155	12.92	0.97	0.356	0.154	---	0.20
156	13.00	0.97	0.356	0.153	---	0.20
157	13.08	1.13	0.418	0.152	---	0.27
158	13.17	1.13	0.418	0.152	---	0.27
159	13.25	1.13	0.418	0.151	---	0.27
160	13.33	1.13	0.418	0.150	---	0.27
161	13.42	1.13	0.418	0.149	---	0.27
162	13.50	1.13	0.418	0.148	---	0.27
163	13.58	0.77	0.283	0.148	---	0.13
164	13.67	0.77	0.283	0.147	---	0.14
165	13.75	0.77	0.283	0.146	---	0.14
166	13.83	0.77	0.283	0.145	---	0.14
167	13.92	0.77	0.283	0.145	---	0.14
168	14.00	0.77	0.283	0.144	---	0.14
169	14.08	0.90	0.332	0.143	---	0.19
170	14.17	0.90	0.332	0.143	---	0.19
171	14.25	0.90	0.332	0.142	---	0.19
172	14.33	0.87	0.320	0.141	---	0.18
173	14.42	0.87	0.320	0.140	---	0.18
174	14.50	0.87	0.320	0.140	---	0.18
175	14.58	0.87	0.320	0.139	---	0.18
176	14.67	0.87	0.320	0.138	---	0.18
177	14.75	0.87	0.320	0.137	---	0.18
178	14.83	0.83	0.307	0.137	---	0.17
179	14.92	0.83	0.307	0.136	---	0.17
180	15.00	0.83	0.307	0.135	---	0.17
181	15.08	0.80	0.295	0.135	---	0.16
182	15.17	0.80	0.295	0.134	---	0.16
183	15.25	0.80	0.295	0.133	---	0.16
184	15.33	0.77	0.283	0.133	---	0.15
185	15.42	0.77	0.283	0.132	---	0.15
186	15.50	0.77	0.283	0.131	---	0.15
187	15.58	0.63	0.233	0.131	---	0.10
188	15.67	0.63	0.233	0.130	---	0.10
189	15.75	0.63	0.233	0.129	---	0.10
190	15.83	0.63	0.233	0.129	---	0.10
191	15.92	0.63	0.233	0.128	---	0.11
192	16.00	0.63	0.233	0.127	---	0.11
193	16.08	0.13	0.049	0.127	0.044	0.00
194	16.17	0.13	0.049	0.126	0.044	0.00
195	16.25	0.13	0.049	0.125	0.044	0.00
196	16.33	0.13	0.049	0.125	0.044	0.00
197	16.42	0.13	0.049	0.124	0.044	0.00
198	16.50	0.13	0.049	0.123	0.044	0.00
199	16.58	0.10	0.037	0.123	0.033	0.00
200	16.67	0.10	0.037	0.122	0.033	0.00
201	16.75	0.10	0.037	0.122	0.033	0.00
202	16.83	0.10	0.037	0.121	0.033	0.00
203	16.92	0.10	0.037	0.120	0.033	0.00
204	17.00	0.10	0.037	0.120	0.033	0.00
205	17.08	0.17	0.061	0.119	0.055	0.01
206	17.17	0.17	0.061	0.119	0.055	0.01
207	17.25	0.17	0.061	0.118	0.055	0.01
208	17.33	0.17	0.061	0.117	0.055	0.01
209	17.42	0.17	0.061	0.117	0.055	0.01
210	17.50	0.17	0.061	0.116	0.055	0.01
211	17.58	0.17	0.061	0.116	0.055	0.01
212	17.67	0.17	0.061	0.115	0.055	0.01
213	17.75	0.17	0.061	0.114	0.055	0.01
214	17.83	0.13	0.049	0.114	0.044	0.00

215	17.92	0.13	0.049	0.113	0.044	0.00
216	18.00	0.13	0.049	0.113	0.044	0.00
217	18.08	0.13	0.049	0.112	0.044	0.00
218	18.17	0.13	0.049	0.112	0.044	0.00
219	18.25	0.13	0.049	0.111	0.044	0.00
220	18.33	0.13	0.049	0.111	0.044	0.00
221	18.42	0.13	0.049	0.110	0.044	0.00
222	18.50	0.13	0.049	0.109	0.044	0.00
223	18.58	0.10	0.037	0.109	0.033	0.00
224	18.67	0.10	0.037	0.108	0.033	0.00
225	18.75	0.10	0.037	0.108	0.033	0.00
226	18.83	0.07	0.025	0.107	0.022	0.00
227	18.92	0.07	0.025	0.107	0.022	0.00
228	19.00	0.07	0.025	0.106	0.022	0.00
229	19.08	0.10	0.037	0.106	0.033	0.00
230	19.17	0.10	0.037	0.105	0.033	0.00
231	19.25	0.10	0.037	0.105	0.033	0.00
232	19.33	0.13	0.049	0.104	0.044	0.00
233	19.42	0.13	0.049	0.104	0.044	0.00
234	19.50	0.13	0.049	0.103	0.044	0.00
235	19.58	0.10	0.037	0.103	0.033	0.00
236	19.67	0.10	0.037	0.102	0.033	0.00
237	19.75	0.10	0.037	0.102	0.033	0.00
238	19.83	0.07	0.025	0.102	0.022	0.00
239	19.92	0.07	0.025	0.101	0.022	0.00
240	20.00	0.07	0.025	0.101	0.022	0.00
241	20.08	0.10	0.037	0.100	0.033	0.00
242	20.17	0.10	0.037	0.100	0.033	0.00
243	20.25	0.10	0.037	0.099	0.033	0.00
244	20.33	0.10	0.037	0.099	0.033	0.00
245	20.42	0.10	0.037	0.098	0.033	0.00
246	20.50	0.10	0.037	0.098	0.033	0.00
247	20.58	0.10	0.037	0.098	0.033	0.00
248	20.67	0.10	0.037	0.097	0.033	0.00
249	20.75	0.10	0.037	0.097	0.033	0.00
250	20.83	0.07	0.025	0.096	0.022	0.00
251	20.92	0.07	0.025	0.096	0.022	0.00
252	21.00	0.07	0.025	0.096	0.022	0.00
253	21.08	0.10	0.037	0.095	0.033	0.00
254	21.17	0.10	0.037	0.095	0.033	0.00
255	21.25	0.10	0.037	0.095	0.033	0.00
256	21.33	0.07	0.025	0.094	0.022	0.00
257	21.42	0.07	0.025	0.094	0.022	0.00
258	21.50	0.07	0.025	0.093	0.022	0.00
259	21.58	0.10	0.037	0.093	0.033	0.00
260	21.67	0.10	0.037	0.093	0.033	0.00
261	21.75	0.10	0.037	0.092	0.033	0.00
262	21.83	0.07	0.025	0.092	0.022	0.00
263	21.92	0.07	0.025	0.092	0.022	0.00
264	22.00	0.07	0.025	0.092	0.022	0.00
265	22.08	0.10	0.037	0.091	0.033	0.00
266	22.17	0.10	0.037	0.091	0.033	0.00
267	22.25	0.10	0.037	0.091	0.033	0.00
268	22.33	0.07	0.025	0.090	0.022	0.00
269	22.42	0.07	0.025	0.090	0.022	0.00
270	22.50	0.07	0.025	0.090	0.022	0.00
271	22.58	0.07	0.025	0.090	0.022	0.00
272	22.67	0.07	0.025	0.089	0.022	0.00
273	22.75	0.07	0.025	0.089	0.022	0.00
274	22.83	0.07	0.025	0.089	0.022	0.00
275	22.92	0.07	0.025	0.089	0.022	0.00
276	23.00	0.07	0.025	0.088	0.022	0.00
277	23.08	0.07	0.025	0.088	0.022	0.00

278	23.17	0.07	0.025	0.088	0.022	0.00
279	23.25	0.07	0.025	0.088	0.022	0.00
280	23.33	0.07	0.025	0.088	0.022	0.00
281	23.42	0.07	0.025	0.087	0.022	0.00
282	23.50	0.07	0.025	0.087	0.022	0.00
283	23.58	0.07	0.025	0.087	0.022	0.00
284	23.67	0.07	0.025	0.087	0.022	0.00
285	23.75	0.07	0.025	0.087	0.022	0.00
286	23.83	0.07	0.025	0.087	0.022	0.00
287	23.92	0.07	0.025	0.087	0.022	0.00
288	24.00	0.07	0.025	0.087	0.022	0.00
	Sum =	100.0			Sum =	11.5

```
Flood volume = Effective rainfall      0.96(In)
 times area      24.4(Ac.)/[(In)/(Ft.)] =       1.9(Ac.Ft)
Total soil loss =      2.12(In)
Total soil loss =     4.303(Ac.Ft)
Total rainfall =      3.07(In)
Flood volume =       84676.2 Cubic Feet
Total soil loss =      187449.5 Cubic Feet
--------------------------------------------------------------------
 Peak flow rate of this hydrograph =      6.593(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    24 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
--------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0004      0.04  Q         |         |         |         |
  0+15       0.0007      0.05  Q         |         |         |         |
  0+20       0.0012      0.06  Q         |         |         |         |
  0+25       0.0017      0.08  Q         |         |         |         |
  0+30       0.0023      0.09  Q         |         |         |         |
  0+35       0.0029      0.09  Q         |         |         |         |
  0+40       0.0035      0.09  Q         |         |         |         |
  0+45       0.0042      0.09  Q         |         |         |         |
  0+50       0.0048      0.10  Q         |         |         |         |
  0+55       0.0056      0.11  Q         |         |         |         |
  1+ 0       0.0064      0.12  Q         |         |         |         |
  1+ 5       0.0072      0.12  Q         |         |         |         |
  1+10       0.0079      0.10  Q         |         |         |         |
  1+15       0.0085      0.09  Q         |         |         |         |
  1+20       0.0092      0.09  Q         |         |         |         |
  1+25       0.0098      0.09  Q         |         |         |         |
  1+30       0.0104      0.09  Q         |         |         |         |
  1+35       0.0110      0.09  Q         |         |         |         |
  1+40       0.0117      0.09  Q         |         |         |         |
  1+45       0.0123      0.09  Q         |         |         |         |
  1+50       0.0129      0.10  Q         |         |         |         |
  1+55       0.0137      0.11  Q         |         |         |         |
  2+ 0       0.0145      0.12  Q         |         |         |         |
  2+ 5       0.0154      0.12  Q         |         |         |         |
  2+10       0.0162      0.12  Q         |         |         |         |
  2+15       0.0170      0.12  Q         |         |         |         |
  2+20       0.0178      0.12  Q         |         |         |         |
  2+25       0.0187      0.12  Q         |         |         |         |
  2+30       0.0195      0.12  Q         |         |         |         |
  2+35       0.0204      0.13  Q         |         |         |         |
  2+40       0.0214      0.14  Q         |         |         |         |
```

2+45	0.0224	0.15	Q	|	|	|	|
2+50	0.0234	0.15	Q	|	|	|	|
2+55	0.0244	0.15	Q	|	|	|	|
3+ 0	0.0255	0.15	Q	|	|	|	|
3+ 5	0.0265	0.15	Q	|	|	|	|
3+10	0.0276	0.15	Q	|	|	|	|
3+15	0.0286	0.15	Q	|	|	|	|
3+20	0.0296	0.15	Q	|	|	|	|
3+25	0.0307	0.15	Q	|	|	|	|
3+30	0.0317	0.15	Q	|	|	|	|
3+35	0.0328	0.15	Q	|	|	|	|
3+40	0.0338	0.15	Q	|	|	|	|
3+45	0.0349	0.15	Q	|	|	|	|
3+50	0.0359	0.16	Q	|	|	|	|
3+55	0.0371	0.17	Q	|	|	|	|
4+ 0	0.0383	0.18	Q	|	|	|	|
4+ 5	0.0396	0.18	Q	|	|	|	|
4+10	0.0408	0.18	Q	|	|	|	|
4+15	0.0421	0.18	Q	|	|	|	|
4+20	0.0434	0.19	Q	|	|	|	|
4+25	0.0448	0.20	Q	|	|	|	|
4+30	0.0462	0.21	Q	|	|	|	|
4+35	0.0476	0.21	Q	|	|	|	|
4+40	0.0491	0.21	QV	|	|	|	|
4+45	0.0505	0.21	QV	|	|	|	|
4+50	0.0520	0.22	QV	|	|	|	|
4+55	0.0536	0.23	QV	|	|	|	|
5+ 0	0.0553	0.24	QV	|	|	|	|
5+ 5	0.0569	0.23	QV	|	|	|	|
5+10	0.0582	0.20	QV	|	|	|	|
5+15	0.0595	0.19	QV	|	|	|	|
5+20	0.0608	0.19	QV	|	|	|	|
5+25	0.0622	0.20	QV	|	|	|	|
5+30	0.0637	0.21	QV	|	|	|	|
5+35	0.0652	0.21	QV	|	|	|	|
5+40	0.0668	0.23	QV	|	|	|	|
5+45	0.0684	0.24	QV	|	|	|	|
5+50	0.0701	0.24	QV	|	|	|	|
5+55	0.0717	0.24	QV	|	|	|	|
6+ 0	0.0734	0.24	QV	|	|	|	|
6+ 5	0.0751	0.25	QV	|	|	|	|
6+10	0.0769	0.26	|Q	|	|	|	|
6+15	0.0787	0.27	|Q	|	|	|	|
6+20	0.0806	0.27	|Q	|	|	|	|
6+25	0.0825	0.27	|Q	|	|	|	|
6+30	0.0844	0.27	|Q	|	|	|	|
6+35	0.0863	0.28	|Q	|	|	|	|
6+40	0.0883	0.29	|Q	|	|	|	|
6+45	0.0903	0.30	|Q	|	|	|	|
6+50	0.0924	0.30	|Q	|	|	|	|
6+55	0.0945	0.30	|Q	|	|	|	|
7+ 0	0.0966	0.30	|Q	|	|	|	|
7+ 5	0.0987	0.30	|QV	|	|	|	|
7+10	0.1007	0.30	|QV	|	|	|	|
7+15	0.1028	0.30	|QV	|	|	|	|
7+20	0.1049	0.31	|QV	|	|	|	|
7+25	0.1072	0.32	|QV	|	|	|	|
7+30	0.1094	0.33	|QV	|	|	|	|
7+35	0.1117	0.34	|QV	|	|	|	|
7+40	0.1142	0.35	|QV	|	|	|	|
7+45	0.1166	0.36	|QV	|	|	|	|
7+50	0.1192	0.37	|QV	|	|	|	|
7+55	0.1218	0.38	|QV	|	|	|	|

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 8+ 0       0.1245      0.39  |QV       |         |         |         |
 8+ 5       0.1273      0.40  |QV       |         |         |         |
 8+10       0.1302      0.44  |QV       |         |         |         |
 8+15       0.1333      0.45  |QV       |         |         |         |
 8+20       0.1364      0.45  |QV       |         |         |         |
 8+25       0.1395      0.45  |QV       |         |         |         |
 8+30       0.1427      0.45  |QV       |         |         |         |
 8+35       0.1458      0.46  |Q V      |         |         |         |
 8+40       0.1491      0.47  |Q V      |         |         |         |
 8+45       0.1524      0.48  |Q V      |         |         |         |
 8+50       0.1556      0.46  |Q V      |         |         |         |
 8+55       0.1581      0.37  |Q V      |         |         |         |
 9+ 0       0.1606      0.36  |Q V      |         |         |         |
 9+ 5       0.1638      0.46  |Q V      |         |         |         |
 9+10       0.1694      0.81  |  Q      |         |         |         |
 9+15       0.1759      0.95  |  Q      |         |         |         |
 9+20       0.1832      1.06  |  VQ     |         |         |         |
 9+25       0.1919      1.26  |  V Q    |         |         |         |
 9+30       0.2011      1.34  |   VQ    |         |         |         |
 9+35       0.2110      1.44  |   VQ    |         |         |         |
 9+40       0.2223      1.64  |   V Q   |         |         |         |
 9+45       0.2341      1.72  |   V Q   |         |         |         |
 9+50       0.2465      1.81  |    V Q  |         |         |         |
 9+55       0.2603      2.00  |    V  Q |         |         |         |
10+ 0       0.2747      2.08  |    V  Q |         |         |         |
10+ 5       0.2872      1.82  |    V Q  |         |         |         |
10+10       0.2919      0.67  | Q   V   |         |         |         |
10+15       0.2940      0.31  |Q    V   |         |         |         |
10+20       0.2952      0.17  Q     V   |         |         |         |
10+25       0.2961      0.14  Q     V   |         |         |         |
10+30       0.2972      0.15  Q     V   |         |         |         |
10+35       0.2997      0.38  |Q    V   |         |         |         |
10+40       0.3083      1.24  |   Q V   |         |         |         |
10+45       0.3189      1.54  |     Q   |         |         |         |
10+50       0.3304      1.67  |     Q   |         |         |         |
10+55       0.3423      1.73  |     QV  |         |         |         |
11+ 0       0.3544      1.76  |      Q  |         |         |         |
11+ 5       0.3665      1.75  |     QV  |         |         |         |
11+10       0.3775      1.60  |     QV  |         |         |         |
11+15       0.3883      1.57  |     QV  |         |         |         |
11+20       0.3991      1.57  |     Q V |         |         |         |
11+25       0.4100      1.58  |     Q V |         |         |         |
11+30       0.4210      1.60  |     Q V |         |         |         |
11+35       0.4315      1.53  |     Q V |         |         |         |
11+40       0.4398      1.21  |   Q    V|         |         |         |
11+45       0.4476      1.12  |   Q    V|         |         |         |
11+50       0.4554      1.14  |   Q    V|         |         |         |
11+55       0.4645      1.31  |    Q   V|         |         |         |
12+ 0       0.4740      1.39  |    Q   V|         |         |         |
12+ 5       0.4859      1.73  |     Q  V|         |         |         |
12+10       0.5062      2.94  |         VQ        |         |         |
12+15       0.5293      3.35  |         V  Q      |         |         |
12+20       0.5539      3.57  |         |V  Q     |         |         |
12+25       0.5801      3.81  |         |V   Q    |         |         |
12+30       0.6070      3.91  |         | V  Q    |         |         |
12+35       0.6349      4.05  |         |  V  Q   |         |         |
12+40       0.6653      4.41  |         |  V   Q  |         |         |
12+45       0.6966      4.55  |         |   V   Q |         |         |
12+50       0.7287      4.66  |         |   V   Q |         |         |
12+55       0.7622      4.86  |         |    V   Q|         |         |
13+ 0       0.7962      4.94  |         |     V  Q|         |         |
13+ 5       0.8320      5.21  |         |      V  Q         |         |
13+10       0.8739      6.07  |         |      V  |   Q     |         |
```

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13+15       0.9178      6.37  |         |       V |    Q    |         |
13+20       0.9626      6.51  |         |        V|     Q   |         |
13+25       1.0078      6.56  |         |         V     Q   |         |
13+30       1.0532      6.59  |         |          |V    Q   |         |
13+35       1.0954      6.14  |         |          | V Q     |         |
13+40       1.1250      4.30  |         |      Q  |  V      |         |
13+45       1.1506      3.71  |         |   Q     |  V      |         |
13+50       1.1746      3.48  |         |  Q      |   V     |         |
13+55       1.1981      3.42  |         |  Q      |   V     |         |
14+ 0       1.2216      3.41  |         |  Q      |    V    |         |
14+ 5       1.2463      3.58  |         |   Q     |    V    |         |
14+10       1.2757      4.28  |         |      Q  |     V   |         |
14+15       1.3068      4.52  |         |       Q |     V   |         |
14+20       1.3383      4.58  |         |       Q |      V  |         |
14+25       1.3690      4.46  |         |      Q  |       V |         |
14+30       1.3995      4.43  |         |      Q  |       V |         |
14+35       1.4301      4.43  |         |      Q  |        V|         |
14+40       1.4607      4.44  |         |      Q  |         V         |
14+45       1.4914      4.46  |         |      Q  |         V         |
14+50       1.5219      4.43  |         |      Q  |         |V        |
14+55       1.5513      4.28  |         |      Q  |         |V        |
15+ 0       1.5805      4.24  |         |     Q   |         | V       |
15+ 5       1.6094      4.19  |         |     Q   |         |  V      |
15+10       1.6372      4.03  |         |     Q   |         |  V      |
15+15       1.6647      3.99  |         |    Q    |         |   V     |
15+20       1.6918      3.94  |         |    Q    |         |   V     |
15+25       1.7178      3.78  |         |    Q    |         |    V    |
15+30       1.7436      3.74  |         |   Q     |         |    V    |
15+35       1.7681      3.56  |         |   Q     |         |     V   |
15+40       1.7880      2.89  |         |Q        |         |     V   |
15+45       1.8064      2.68  |         Q         |         |      V  |
15+50       1.8244      2.61  |         Q         |         |      V  |
15+55       1.8423      2.59  |         Q         |         |      V  |
16+ 0       1.8602      2.60  |         Q         |         |       V |
16+ 5       1.8756      2.24  |       Q |         |         |       V |
16+10       1.8815      0.86  |  Q      |         |         |       V |
16+15       1.8843      0.40  |Q        |         |         |       V |
16+20       1.8858      0.22  Q         |         |         |       V |
16+25       1.8869      0.16  Q         |         |         |       V |
16+30       1.8878      0.14  Q         |         |         |       V |
16+35       1.8886      0.12  Q         |         |         |       V |
16+40       1.8893      0.10  Q         |         |         |       V |
16+45       1.8900      0.09  Q         |         |         |       V |
16+50       1.8906      0.09  Q         |         |         |       V |
16+55       1.8912      0.09  Q         |         |         |       V |
17+ 0       1.8918      0.09  Q         |         |         |       V |
17+ 5       1.8925      0.10  Q         |         |         |       V |
17+10       1.8934      0.13  Q         |         |         |       V |
17+15       1.8944      0.14  Q         |         |         |       V |
17+20       1.8955      0.15  Q         |         |         |        V|
17+25       1.8965      0.15  Q         |         |         |        V|
17+30       1.8975      0.15  Q         |         |         |        V|
17+35       1.8986      0.15  Q         |         |         |        V|
17+40       1.8996      0.15  Q         |         |         |        V|
17+45       1.9007      0.15  Q         |         |         |        V|
17+50       1.9017      0.15  Q         |         |         |        V|
17+55       1.9026      0.13  Q         |         |         |        V|
18+ 0       1.9034      0.12  Q         |         |         |        V|
18+ 5       1.9043      0.12  Q         |         |         |        V|
18+10       1.9051      0.12  Q         |         |         |        V|
18+15       1.9059      0.12  Q         |         |         |        V|
18+20       1.9068      0.12  Q         |         |         |        V|
18+25       1.9076      0.12  Q         |         |         |        V|
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18+30	1.9084	0.12	Q	|	|	|	V|
18+35	1.9092	0.12	Q	|	|	|	V|
18+40	1.9099	0.10	Q	|	|	|	V|
18+45	1.9106	0.09	Q	|	|	|	V|
18+50	1.9112	0.09	Q	|	|	|	V|
18+55	1.9117	0.07	Q	|	|	|	V|
19+ 0	1.9121	0.06	Q	|	|	|	V|
19+ 5	1.9126	0.07	Q	|	|	|	V|
19+10	1.9131	0.08	Q	|	|	|	V|
19+15	1.9137	0.09	Q	|	|	|	V|
19+20	1.9144	0.09	Q	|	|	|	V|
19+25	1.9151	0.11	Q	|	|	|	V|
19+30	1.9159	0.12	Q	|	|	|	V|
19+35	1.9167	0.12	Q	|	|	|	V|
19+40	1.9174	0.10	Q	|	|	|	V|
19+45	1.9181	0.09	Q	|	|	|	V|
19+50	1.9187	0.09	Q	|	|	|	V|
19+55	1.9192	0.07	Q	|	|	|	V|
20+ 0	1.9196	0.06	Q	|	|	|	V|
20+ 5	1.9200	0.07	Q	|	|	|	V|
20+10	1.9206	0.08	Q	|	|	|	V|
20+15	1.9212	0.09	Q	|	|	|	V|
20+20	1.9218	0.09	Q	|	|	|	V|
20+25	1.9225	0.09	Q	|	|	|	V|
20+30	1.9231	0.09	Q	|	|	|	V|
20+35	1.9237	0.09	Q	|	|	|	V|
20+40	1.9243	0.09	Q	|	|	|	V|
20+45	1.9250	0.09	Q	|	|	|	V|
20+50	1.9255	0.09	Q	|	|	|	V|
20+55	1.9260	0.07	Q	|	|	|	V|
21+ 0	1.9265	0.06	Q	|	|	|	V|
21+ 5	1.9269	0.07	Q	|	|	|	V|
21+10	1.9275	0.08	Q	|	|	|	V|
21+15	1.9281	0.09	Q	|	|	|	V|
21+20	1.9287	0.09	Q	|	|	|	V|
21+25	1.9292	0.07	Q	|	|	|	V|
21+30	1.9296	0.06	Q	|	|	|	V|
21+35	1.9300	0.07	Q	|	|	|	V|
21+40	1.9306	0.08	Q	|	|	|	V|
21+45	1.9312	0.09	Q	|	|	|	V|
21+50	1.9318	0.09	Q	|	|	|	V|
21+55	1.9323	0.07	Q	|	|	|	V|
22+ 0	1.9327	0.06	Q	|	|	|	V|
22+ 5	1.9332	0.07	Q	|	|	|	V|
22+10	1.9337	0.08	Q	|	|	|	V|
22+15	1.9343	0.09	Q	|	|	|	V|
22+20	1.9349	0.09	Q	|	|	|	V|
22+25	1.9354	0.07	Q	|	|	|	V|
22+30	1.9358	0.06	Q	|	|	|	V|
22+35	1.9363	0.06	Q	|	|	|	V|
22+40	1.9367	0.06	Q	|	|	|	V|
22+45	1.9371	0.06	Q	|	|	|	V|
22+50	1.9375	0.06	Q	|	|	|	V|
22+55	1.9379	0.06	Q	|	|	|	V|
23+ 0	1.9383	0.06	Q	|	|	|	V|
23+ 5	1.9388	0.06	Q	|	|	|	V|
23+10	1.9392	0.06	Q	|	|	|	V|
23+15	1.9396	0.06	Q	|	|	|	V|
23+20	1.9400	0.06	Q	|	|	|	V|
23+25	1.9404	0.06	Q	|	|	|	V|
23+30	1.9408	0.06	Q	|	|	|	V|
23+35	1.9413	0.06	Q	|	|	|	V|
23+40	1.9417	0.06	Q	|	|	|	V|

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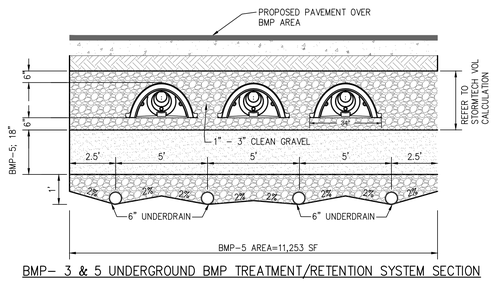
   23+45       1.9421      0.06  Q         |         |         |        V|
   23+50       1.9425      0.06  Q         |         |         |        V|
   23+55       1.9429      0.06  Q         |         |         |        V|
   24+ 0       1.9433      0.06  Q         |         |         |        V|
   24+ 5       1.9437      0.05  Q         |         |         |        V|
   24+10       1.9438      0.02  Q         |         |         |        V|
   24+15       1.9439      0.01  Q         |         |         |        V|
   24+20       1.9439      0.00  Q         |         |         |        V|
   24+25       1.9439      0.00  Q         |         |         |        V|
   24+30       1.9439      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

PROPOSED DRAINAGE MAP - UNIT HYDROGRAPH METHOD

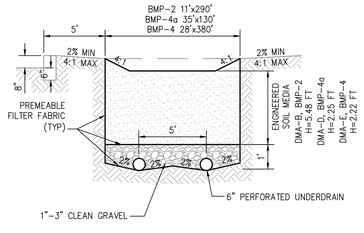
DRAINAGE LEGEND

SYMBOL	DEFINITION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	PROPOSED DEVELOPMENT DRAINAGE BOUNDARY
	DIRECTION OF FLOW
Q100YR1HR = 10.2cfs	100YEAR1HR FLOW FOR AREA
Q10YR1HR = 6.2 cfs	10YEAR1HR FLOW FOR AREA
L=762'	LENGTH OF TRAVEL
3 EL=1431	NODE WITH ELEVATION
A	AREA NAME (ON-SITE)
1.70	AREA ACRES



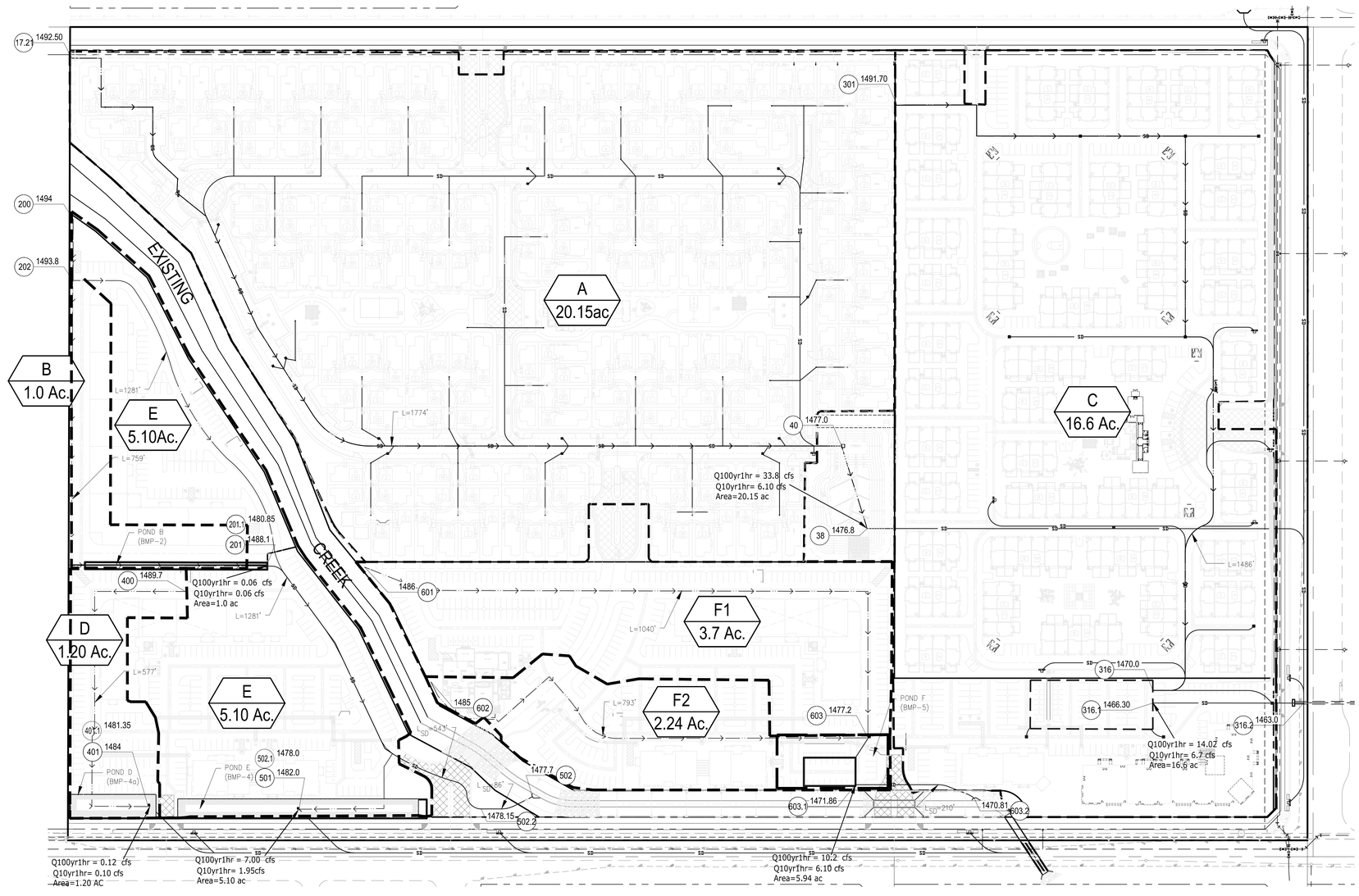
BMP- 3 & 5 UNDERGROUND BMP TREATMENT/RETENTION SYSTEM SECTION

N.T.S.



BMP-2(POND B), BMP-4a(POND D) & BMP-4 (POND E)
BIORETENTION FACILITY WITH UNDERDRAIN

N.T.S.



100 YR						
AREA DESIGNATION	AREA AC.	NODE	1HR (CFS)	3HR (CFS)	6HR (CFS)	24HR (CFS)
A	20.15	38	33.8	258.9	27.50	11.60
B	1.00	201	0.06	0.06	1.50	0.60
C	16.60	316.1	14.02	16.24	18.50	6.70
D	1.20	401	0.12	0.76	1.20	0.65
E	5.10	501	7.00	6.75	6.70	3.05
F	5.94	603.1	10.2	8.13	7.90	3.52
TOTAL	49.99		65.30	60.84	63.30	26.12

10 YR						
AREA DESIGNATION	AREA AC.	NODE	1HR (CFS)	3HR (CFS)	6HR (CFS)	24HR (CFS)
A	20.15	38	6.10	16.64	18.40	6.95
B	1.00	201	0.06	0.06	0.06	0.06
C	16.60	316.1	6.70	6.70	6.70	3.85
D	1.20	401	0.10	0.10	0.50	0.32
E	5.10	501	1.95	3.97	4.53	1.91
F	5.94	603.1	5.04	5.30	5.33	2.20
TOTAL	49.99		19.95	32.77	35.52	15.29

2 YR			
AREA DESIGNATION	AREA AC.	NODE	24HR (CFS)
A	20.15	38	0.393
B	1.00	201	0.064
C	16.60	316.1	1.861
D	1.20	401.1	0.064
E	5.10	501	0.393
F	5.94	603.1	0.393
TOTAL	49.99		3.17

GRAPHIC SCALE
80 0 40 80 160 240
1 inch = 80 ft.

Call before you Dig
Know before you dig, call before you utility lines. It's easy.
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1-800-227-2600

REVISIONS				
SHT.	DESCRIPTION	DATE	BY	APRD

PACIFIC COAST LAND CONSULTANTS, Inc.
Civil Engineering • Land Planning • Land Surveying
25096 Jefferson Avenue, Suite "D" Murrieta, Ca. 92562
Tel: (951) 698-1350 Fax: (951) 698-8657

PREPARED BY:
CHRIS D. HOPPER
RCE NO. 34821
DATE
Benjie

SEAL
REGISTERED PROFESSIONAL ENGINEER CHRIS D. HOPPER No. 34821 Exp. 9/30/17 CIVIL STATE OF CALIFORNIA

SCALE: 1" =40'
DESIGN: BAM/REK
DRAWN: BENJIE
CHECKED: HJK/BAM
APPROVED: HJK/CDH
DATE: NOVEMBER, 2016

CITY OF MENIFEE
ENGINEERING DEPARTMENT

JONATHAN G. SMITH
DIRECTOR OF PUBLIC WORKS/
CITY ENGINEER
RCE 61253
EXP. 6/30/16
DATE

RECOMMENDED BY:
DATE

CITY OF MENIFEE

PROP. DRAINAGE MAP FOR AREA A, B, C, D, E & F
MILL CREEK PROMENADE
UNIT HYDROGRAPH METHOD-2YR,10YR & 100YR
1 HR, 3HR, 6HR & 24 HR

SHEET NO.
1 OF 1
PROJECT NO:

S:\Land Projects 2004\27259 MILL CREEK PROMENADE\DWG\10-HYDROLOGY\PROPOSED\UH\AREA-ABCDEF\proj-ABCDEF-HYDRO-UH-PLAN.dwg 2-27-18 08:37:39 AM

Project: Mill Creek
Location: Haun Rd, Menifee, Ca
Subject: Proposed Area B- Areas, Length of Concentration, Nodes

Area A
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
A		20.15	1774	675	17.21	1492.50	38.00	1476.80	15.70

Area B
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
B		1.00	859	509	201.1	1494.00	201.00	1488.10	5.90

Area C
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
C		16.60	1486	435	301	1491.70	201.00	1470.00	21.70

Area D
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
D		1.20	577	273	400	1489.70	401.00	1484.00	5.70

Area E
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
E		5.10	1281	566	200	1494.00	501.10	1482.00	12.00

Area F
LOTS

Mark	Area (sf)	Area (ac)	L (ft)	Lc(ft)	Node Up	Elev	Node Dn	Elev	ΔH
F1		3.70	1000	552	601	1486.00	603.00	1477.17	8.83
F2		2.24	793	328	602	1485.00	603.00	1477.17	7.83

Run-off Index			Commercial	
	soil B	25%	56	14
	soil C	50%	69	35
	soil D	25%	75	19
			RI=	68

Imperviousness- COMMERCIAL = 0.9

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

--------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA A (Pond A)- Q10yr1hr(ONSITE)- Unit Hydrograph Method

-------------------------------------------------------------------
Program License Serial Number 4066
-------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHA110.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    17
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       35.572 (CFS)
             Total volume =       1.247 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       40.000 to Point/Station       38.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth

CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    2.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   0.39(CFS)
```

```
Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    5.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   5.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     3.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  39.99(CFS)

Total outflow at this depth =     40.38(CFS)

--------------------------------------------------------------------
Total number of inflow hydrograph intervals = 17
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
--------------------------------------------------------------------
--------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
-------------------------------------------------------------------
--------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
-------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.208      0.393      0.207        0.209
   2.000      0.457      0.393      0.456        0.458
   3.000      0.751      0.393      0.750        0.752
   4.000      1.091      0.393      1.090        1.092
   5.000      1.480     40.379      1.341        1.619
--------------------------------------------------------------------
              Hydrograph Detention Basin Routing
-------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                    Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       8.9   17.79   26.68   35.57 (Ft.)
 0.083    1.82    0.01      0.006  OI      |       |       |       |     0.03
 0.167    5.13    0.06      0.030  O   I   |       |       |       |     0.14
 0.250    6.90    0.13      0.071  O     I |       |       |       |     0.34
 0.333    7.70    0.23      0.120  O     I |       |       |       |     0.58
 0.417    8.80    0.33      0.175  O      I|       |       |       |     0.84
```

0.500	9.72	0.39	0.236	O	I	|	|	|	1.11
0.583	10.87	0.39	0.304	O	|I	|	|	|	1.39
0.667	13.23	0.39	0.384	O	| I	|	|	|	1.71
0.750	18.23	0.39	0.490	O	|	I	|	|	2.11
0.833	34.62	0.39	0.669	O	|	|	|	I|	2.72
0.917	35.57	0.39	0.908	O	|	|	|	I	3.46
1.000	16.47	0.39	1.085	O	|	I |	|	|	3.98
1.083	7.80	6.06	1.146	|	O I|	|	|	|	4.14
1.167	2.83	5.67	1.142	| I	O |	|	|	|	4.13
1.250	1.10	3.73	1.123	I	O |	|	|	|	4.08
1.333	0.26	2.14	1.108	IO	|	|	|	|	4.04
1.417	0.05	1.10	1.098	O	|	|	|	|	4.02
1.500	0.00	0.54	1.092	O	|	|	|	|	4.00
1.583	0.00	0.39	1.089	O	|	|	|	|	3.99
1.667	0.00	0.39	1.087	O	|	|	|	|	3.99
1.750	0.00	0.39	1.084	O	|	|	|	|	3.98
1.833	0.00	0.39	1.081	O	|	|	|	|	3.97
1.917	0.00	0.39	1.078	O	|	|	|	|	3.96
2.000	0.00	0.39	1.076	O	|	|	|	|	3.95
2.083	0.00	0.39	1.073	O	|	|	|	|	3.95
2.167	0.00	0.39	1.070	O	|	|	|	|	3.94
2.250	0.00	0.39	1.068	O	|	|	|	|	3.93
2.333	0.00	0.39	1.065	O	|	|	|	|	3.92
2.417	0.00	0.39	1.062	O	|	|	|	|	3.92
2.500	0.00	0.39	1.059	O	|	|	|	|	3.91
2.583	0.00	0.39	1.057	O	|	|	|	|	3.90
2.667	0.00	0.39	1.054	O	|	|	|	|	3.89
2.750	0.00	0.39	1.051	O	|	|	|	|	3.88
2.833	0.00	0.39	1.049	O	|	|	|	|	3.88
2.917	0.00	0.39	1.046	O	|	|	|	|	3.87
3.000	0.00	0.39	1.043	O	|	|	|	|	3.86
3.083	0.00	0.39	1.040	O	|	|	|	|	3.85
3.167	0.00	0.39	1.038	O	|	|	|	|	3.84
3.250	0.00	0.39	1.035	O	|	|	|	|	3.84
3.333	0.00	0.39	1.032	O	|	|	|	|	3.83
3.417	0.00	0.39	1.030	O	|	|	|	|	3.82
3.500	0.00	0.39	1.027	O	|	|	|	|	3.81
3.583	0.00	0.39	1.024	O	|	|	|	|	3.80
3.667	0.00	0.39	1.022	O	|	|	|	|	3.80
3.750	0.00	0.39	1.019	O	|	|	|	|	3.79
3.833	0.00	0.39	1.016	O	|	|	|	|	3.78
3.917	0.00	0.39	1.013	O	|	|	|	|	3.77
4.000	0.00	0.39	1.011	O	|	|	|	|	3.76
4.083	0.00	0.39	1.008	O	|	|	|	|	3.76
4.167	0.00	0.39	1.005	O	|	|	|	|	3.75
4.250	0.00	0.39	1.003	O	|	|	|	|	3.74
4.333	0.00	0.39	1.000	O	|	|	|	|	3.73
4.417	0.00	0.39	0.997	O	|	|	|	|	3.72
4.500	0.00	0.39	0.994	O	|	|	|	|	3.72
4.583	0.00	0.39	0.992	O	|	|	|	|	3.71
4.667	0.00	0.39	0.989	O	|	|	|	|	3.70
4.750	0.00	0.39	0.986	O	|	|	|	|	3.69
4.833	0.00	0.39	0.984	O	|	|	|	|	3.68
4.917	0.00	0.39	0.981	O	|	|	|	|	3.68
5.000	0.00	0.39	0.978	O	|	|	|	|	3.67
5.083	0.00	0.39	0.976	O	|	|	|	|	3.66
5.167	0.00	0.39	0.973	O	|	|	|	|	3.65
5.250	0.00	0.39	0.970	O	|	|	|	|	3.64
5.333	0.00	0.39	0.967	O	|	|	|	|	3.64
5.417	0.00	0.39	0.965	O	|	|	|	|	3.63
5.500	0.00	0.39	0.962	O	|	|	|	|	3.62
5.583	0.00	0.39	0.959	O	|	|	|	|	3.61
5.667	0.00	0.39	0.957	O	|	|	|	|	3.60

5.750	0.00	0.39	0.954	O	|	|	|	|	3.60
5.833	0.00	0.39	0.951	O	|	|	|	|	3.59
5.917	0.00	0.39	0.948	O	|	|	|	|	3.58
6.000	0.00	0.39	0.946	O	|	|	|	|	3.57
6.083	0.00	0.39	0.943	O	|	|	|	|	3.56
6.167	0.00	0.39	0.940	O	|	|	|	|	3.56
6.250	0.00	0.39	0.938	O	|	|	|	|	3.55
6.333	0.00	0.39	0.935	O	|	|	|	|	3.54
6.417	0.00	0.39	0.932	O	|	|	|	|	3.53
6.500	0.00	0.39	0.929	O	|	|	|	|	3.52
6.583	0.00	0.39	0.927	O	|	|	|	|	3.52
6.667	0.00	0.39	0.924	O	|	|	|	|	3.51
6.750	0.00	0.39	0.921	O	|	|	|	|	3.50
6.833	0.00	0.39	0.919	O	|	|	|	|	3.49
6.917	0.00	0.39	0.916	O	|	|	|	|	3.49
7.000	0.00	0.39	0.913	O	|	|	|	|	3.48
7.083	0.00	0.39	0.911	O	|	|	|	|	3.47
7.167	0.00	0.39	0.908	O	|	|	|	|	3.46
7.250	0.00	0.39	0.905	O	|	|	|	|	3.45
7.333	0.00	0.39	0.902	O	|	|	|	|	3.45
7.417	0.00	0.39	0.900	O	|	|	|	|	3.44
7.500	0.00	0.39	0.897	O	|	|	|	|	3.43
7.583	0.00	0.39	0.894	O	|	|	|	|	3.42
7.667	0.00	0.39	0.892	O	|	|	|	|	3.41
7.750	0.00	0.39	0.889	O	|	|	|	|	3.41
7.833	0.00	0.39	0.886	O	|	|	|	|	3.40
7.917	0.00	0.39	0.883	O	|	|	|	|	3.39
8.000	0.00	0.39	0.881	O	|	|	|	|	3.38
8.083	0.00	0.39	0.878	O	|	|	|	|	3.37
8.167	0.00	0.39	0.875	O	|	|	|	|	3.37
8.250	0.00	0.39	0.873	O	|	|	|	|	3.36
8.333	0.00	0.39	0.870	O	|	|	|	|	3.35
8.417	0.00	0.39	0.867	O	|	|	|	|	3.34
8.500	0.00	0.39	0.865	O	|	|	|	|	3.33
8.583	0.00	0.39	0.862	O	|	|	|	|	3.33
8.667	0.00	0.39	0.859	O	|	|	|	|	3.32
8.750	0.00	0.39	0.856	O	|	|	|	|	3.31
8.833	0.00	0.39	0.854	O	|	|	|	|	3.30
8.917	0.00	0.39	0.851	O	|	|	|	|	3.29
9.000	0.00	0.39	0.848	O	|	|	|	|	3.29
9.083	0.00	0.39	0.846	O	|	|	|	|	3.28
9.167	0.00	0.39	0.843	O	|	|	|	|	3.27
9.250	0.00	0.39	0.840	O	|	|	|	|	3.26
9.333	0.00	0.39	0.837	O	|	|	|	|	3.25
9.417	0.00	0.39	0.835	O	|	|	|	|	3.25
9.500	0.00	0.39	0.832	O	|	|	|	|	3.24
9.583	0.00	0.39	0.829	O	|	|	|	|	3.23
9.667	0.00	0.39	0.827	O	|	|	|	|	3.22
9.750	0.00	0.39	0.824	O	|	|	|	|	3.21
9.833	0.00	0.39	0.821	O	|	|	|	|	3.21
9.917	0.00	0.39	0.819	O	|	|	|	|	3.20
10.000	0.00	0.39	0.816	O	|	|	|	|	3.19
10.083	0.00	0.39	0.813	O	|	|	|	|	3.18
10.167	0.00	0.39	0.810	O	|	|	|	|	3.17
10.250	0.00	0.39	0.808	O	|	|	|	|	3.17
10.333	0.00	0.39	0.805	O	|	|	|	|	3.16
10.417	0.00	0.39	0.802	O	|	|	|	|	3.15
10.500	0.00	0.39	0.800	O	|	|	|	|	3.14
10.583	0.00	0.39	0.797	O	|	|	|	|	3.13
10.667	0.00	0.39	0.794	O	|	|	|	|	3.13
10.750	0.00	0.39	0.791	O	|	|	|	|	3.12
10.833	0.00	0.39	0.789	O	|	|	|	|	3.11
10.917	0.00	0.39	0.786	O	|	|	|	|	3.10

11.000	0.00	0.39	0.783	O	|	|	|	|	3.10
11.083	0.00	0.39	0.781	O	|	|	|	|	3.09
11.167	0.00	0.39	0.778	O	|	|	|	|	3.08
11.250	0.00	0.39	0.775	O	|	|	|	|	3.07
11.333	0.00	0.39	0.772	O	|	|	|	|	3.06
11.417	0.00	0.39	0.770	O	|	|	|	|	3.06
11.500	0.00	0.39	0.767	O	|	|	|	|	3.05
11.583	0.00	0.39	0.764	O	|	|	|	|	3.04
11.667	0.00	0.39	0.762	O	|	|	|	|	3.03
11.750	0.00	0.39	0.759	O	|	|	|	|	3.02
11.833	0.00	0.39	0.756	O	|	|	|	|	3.02
11.917	0.00	0.39	0.754	O	|	|	|	|	3.01
12.000	0.00	0.39	0.751	O	|	|	|	|	3.00
12.083	0.00	0.39	0.748	O	|	|	|	|	2.99
12.167	0.00	0.39	0.745	O	|	|	|	|	2.98
12.250	0.00	0.39	0.743	O	|	|	|	|	2.97
12.333	0.00	0.39	0.740	O	|	|	|	|	2.96
12.417	0.00	0.39	0.737	O	|	|	|	|	2.95
12.500	0.00	0.39	0.735	O	|	|	|	|	2.94
12.583	0.00	0.39	0.732	O	|	|	|	|	2.93
12.667	0.00	0.39	0.729	O	|	|	|	|	2.93
12.750	0.00	0.39	0.726	O	|	|	|	|	2.92
12.833	0.00	0.39	0.724	O	|	|	|	|	2.91
12.917	0.00	0.39	0.721	O	|	|	|	|	2.90
13.000	0.00	0.39	0.718	O	|	|	|	|	2.89
13.083	0.00	0.39	0.716	O	|	|	|	|	2.88
13.167	0.00	0.39	0.713	O	|	|	|	|	2.87
13.250	0.00	0.39	0.710	O	|	|	|	|	2.86
13.333	0.00	0.39	0.708	O	|	|	|	|	2.85
13.417	0.00	0.39	0.705	O	|	|	|	|	2.84
13.500	0.00	0.39	0.702	O	|	|	|	|	2.83
13.583	0.00	0.39	0.699	O	|	|	|	|	2.82
13.667	0.00	0.39	0.697	O	|	|	|	|	2.82
13.750	0.00	0.39	0.694	O	|	|	|	|	2.81
13.833	0.00	0.39	0.691	O	|	|	|	|	2.80
13.917	0.00	0.39	0.689	O	|	|	|	|	2.79
14.000	0.00	0.39	0.686	O	|	|	|	|	2.78
14.083	0.00	0.39	0.683	O	|	|	|	|	2.77
14.167	0.00	0.39	0.680	O	|	|	|	|	2.76
14.250	0.00	0.39	0.678	O	|	|	|	|	2.75
14.333	0.00	0.39	0.675	O	|	|	|	|	2.74
14.417	0.00	0.39	0.672	O	|	|	|	|	2.73
14.500	0.00	0.39	0.670	O	|	|	|	|	2.72
14.583	0.00	0.39	0.667	O	|	|	|	|	2.71
14.667	0.00	0.39	0.664	O	|	|	|	|	2.70
14.750	0.00	0.39	0.661	O	|	|	|	|	2.70
14.833	0.00	0.39	0.659	O	|	|	|	|	2.69
14.917	0.00	0.39	0.656	O	|	|	|	|	2.68
15.000	0.00	0.39	0.653	O	|	|	|	|	2.67
15.083	0.00	0.39	0.651	O	|	|	|	|	2.66
15.167	0.00	0.39	0.648	O	|	|	|	|	2.65
15.250	0.00	0.39	0.645	O	|	|	|	|	2.64
15.333	0.00	0.39	0.643	O	|	|	|	|	2.63
15.417	0.00	0.39	0.640	O	|	|	|	|	2.62
15.500	0.00	0.39	0.637	O	|	|	|	|	2.61
15.583	0.00	0.39	0.634	O	|	|	|	|	2.60
15.667	0.00	0.39	0.632	O	|	|	|	|	2.59
15.750	0.00	0.39	0.629	O	|	|	|	|	2.59
15.833	0.00	0.39	0.626	O	|	|	|	|	2.58
15.917	0.00	0.39	0.624	O	|	|	|	|	2.57
16.000	0.00	0.39	0.621	O	|	|	|	|	2.56
16.083	0.00	0.39	0.618	O	|	|	|	|	2.55
16.167	0.00	0.39	0.615	O	|	|	|	|	2.54

16.250	0.00	0.39	0.613	O	|	|	|	|	2.53
16.333	0.00	0.39	0.610	O	|	|	|	|	2.52
16.417	0.00	0.39	0.607	O	|	|	|	|	2.51
16.500	0.00	0.39	0.605	O	|	|	|	|	2.50
16.583	0.00	0.39	0.602	O	|	|	|	|	2.49
16.667	0.00	0.39	0.599	O	|	|	|	|	2.48
16.750	0.00	0.39	0.597	O	|	|	|	|	2.47
16.833	0.00	0.39	0.594	O	|	|	|	|	2.47
16.917	0.00	0.39	0.591	O	|	|	|	|	2.46
17.000	0.00	0.39	0.588	O	|	|	|	|	2.45
17.083	0.00	0.39	0.586	O	|	|	|	|	2.44
17.167	0.00	0.39	0.583	O	|	|	|	|	2.43
17.250	0.00	0.39	0.580	O	|	|	|	|	2.42
17.333	0.00	0.39	0.578	O	|	|	|	|	2.41
17.417	0.00	0.39	0.575	O	|	|	|	|	2.40
17.500	0.00	0.39	0.572	O	|	|	|	|	2.39
17.583	0.00	0.39	0.569	O	|	|	|	|	2.38
17.667	0.00	0.39	0.567	O	|	|	|	|	2.37
17.750	0.00	0.39	0.564	O	|	|	|	|	2.36
17.833	0.00	0.39	0.561	O	|	|	|	|	2.35
17.917	0.00	0.39	0.559	O	|	|	|	|	2.35
18.000	0.00	0.39	0.556	O	|	|	|	|	2.34
18.083	0.00	0.39	0.553	O	|	|	|	|	2.33
18.167	0.00	0.39	0.551	O	|	|	|	|	2.32
18.250	0.00	0.39	0.548	O	|	|	|	|	2.31
18.333	0.00	0.39	0.545	O	|	|	|	|	2.30
18.417	0.00	0.39	0.542	O	|	|	|	|	2.29
18.500	0.00	0.39	0.540	O	|	|	|	|	2.28
18.583	0.00	0.39	0.537	O	|	|	|	|	2.27
18.667	0.00	0.39	0.534	O	|	|	|	|	2.26
18.750	0.00	0.39	0.532	O	|	|	|	|	2.25
18.833	0.00	0.39	0.529	O	|	|	|	|	2.24
18.917	0.00	0.39	0.526	O	|	|	|	|	2.24
19.000	0.00	0.39	0.523	O	|	|	|	|	2.23
19.083	0.00	0.39	0.521	O	|	|	|	|	2.22
19.167	0.00	0.39	0.518	O	|	|	|	|	2.21
19.250	0.00	0.39	0.515	O	|	|	|	|	2.20
19.333	0.00	0.39	0.513	O	|	|	|	|	2.19
19.417	0.00	0.39	0.510	O	|	|	|	|	2.18
19.500	0.00	0.39	0.507	O	|	|	|	|	2.17
19.583	0.00	0.39	0.504	O	|	|	|	|	2.16
19.667	0.00	0.39	0.502	O	|	|	|	|	2.15
19.750	0.00	0.39	0.499	O	|	|	|	|	2.14
19.833	0.00	0.39	0.496	O	|	|	|	|	2.13
19.917	0.00	0.39	0.494	O	|	|	|	|	2.12
20.000	0.00	0.39	0.491	O	|	|	|	|	2.12
20.083	0.00	0.39	0.488	O	|	|	|	|	2.11
20.167	0.00	0.39	0.486	O	|	|	|	|	2.10
20.250	0.00	0.39	0.483	O	|	|	|	|	2.09
20.333	0.00	0.39	0.480	O	|	|	|	|	2.08
20.417	0.00	0.39	0.477	O	|	|	|	|	2.07
20.500	0.00	0.39	0.475	O	|	|	|	|	2.06
20.583	0.00	0.39	0.472	O	|	|	|	|	2.05
20.667	0.00	0.39	0.469	O	|	|	|	|	2.04
20.750	0.00	0.39	0.467	O	|	|	|	|	2.03
20.833	0.00	0.39	0.464	O	|	|	|	|	2.02
20.917	0.00	0.39	0.461	O	|	|	|	|	2.01
21.000	0.00	0.39	0.458	O	|	|	|	|	2.00
21.083	0.00	0.39	0.456	O	|	|	|	|	2.00
21.167	0.00	0.39	0.453	O	|	|	|	|	1.98
21.250	0.00	0.39	0.450	O	|	|	|	|	1.97
21.333	0.00	0.39	0.448	O	|	|	|	|	1.96
21.417	0.00	0.39	0.445	O	|	|	|	|	1.95

21.500	0.00	0.39	0.442	O	|	|	|	|	1.94
21.583	0.00	0.39	0.440	O	|	|	|	|	1.93
21.667	0.00	0.39	0.437	O	|	|	|	|	1.92
21.750	0.00	0.39	0.434	O	|	|	|	|	1.91
21.833	0.00	0.39	0.431	O	|	|	|	|	1.90
21.917	0.00	0.39	0.429	O	|	|	|	|	1.89
22.000	0.00	0.39	0.426	O	|	|	|	|	1.88
22.083	0.00	0.39	0.423	O	|	|	|	|	1.86
22.167	0.00	0.39	0.421	O	|	|	|	|	1.85
22.250	0.00	0.39	0.418	O	|	|	|	|	1.84
22.333	0.00	0.39	0.415	O	|	|	|	|	1.83
22.417	0.00	0.39	0.412	O	|	|	|	|	1.82
22.500	0.00	0.39	0.410	O	|	|	|	|	1.81
22.583	0.00	0.39	0.407	O	|	|	|	|	1.80
22.667	0.00	0.39	0.404	O	|	|	|	|	1.79
22.750	0.00	0.39	0.402	O	|	|	|	|	1.78
22.833	0.00	0.39	0.399	O	|	|	|	|	1.77
22.917	0.00	0.39	0.396	O	|	|	|	|	1.76
23.000	0.00	0.39	0.393	O	|	|	|	|	1.74
23.083	0.00	0.39	0.391	O	|	|	|	|	1.73
23.167	0.00	0.39	0.388	O	|	|	|	|	1.72
23.250	0.00	0.39	0.385	O	|	|	|	|	1.71
23.333	0.00	0.39	0.383	O	|	|	|	|	1.70
23.417	0.00	0.39	0.380	O	|	|	|	|	1.69
23.500	0.00	0.39	0.377	O	|	|	|	|	1.68
23.583	0.00	0.39	0.375	O	|	|	|	|	1.67
23.667	0.00	0.39	0.372	O	|	|	|	|	1.66
23.750	0.00	0.39	0.369	O	|	|	|	|	1.65
23.833	0.00	0.39	0.366	O	|	|	|	|	1.64
23.917	0.00	0.39	0.364	O	|	|	|	|	1.63
24.000	0.00	0.39	0.361	O	|	|	|	|	1.61
24.083	0.00	0.39	0.358	O	|	|	|	|	1.60
24.167	0.00	0.39	0.356	O	|	|	|	|	1.59
24.250	0.00	0.39	0.353	O	|	|	|	|	1.58
24.333	0.00	0.39	0.350	O	|	|	|	|	1.57
24.417	0.00	0.39	0.347	O	|	|	|	|	1.56
24.500	0.00	0.39	0.345	O	|	|	|	|	1.55
24.583	0.00	0.39	0.342	O	|	|	|	|	1.54
24.667	0.00	0.39	0.339	O	|	|	|	|	1.53
24.750	0.00	0.39	0.337	O	|	|	|	|	1.52
24.833	0.00	0.39	0.334	O	|	|	|	|	1.51
24.917	0.00	0.39	0.331	O	|	|	|	|	1.49
25.000	0.00	0.39	0.329	O	|	|	|	|	1.48
25.083	0.00	0.39	0.326	O	|	|	|	|	1.47
25.167	0.00	0.39	0.323	O	|	|	|	|	1.46
25.250	0.00	0.39	0.320	O	|	|	|	|	1.45
25.333	0.00	0.39	0.318	O	|	|	|	|	1.44
25.417	0.00	0.39	0.315	O	|	|	|	|	1.43
25.500	0.00	0.39	0.312	O	|	|	|	|	1.42
25.583	0.00	0.39	0.310	O	|	|	|	|	1.41
25.667	0.00	0.39	0.307	O	|	|	|	|	1.40
25.750	0.00	0.39	0.304	O	|	|	|	|	1.39
25.833	0.00	0.39	0.301	O	|	|	|	|	1.38
25.917	0.00	0.39	0.299	O	|	|	|	|	1.36
26.000	0.00	0.39	0.296	O	|	|	|	|	1.35
26.083	0.00	0.39	0.293	O	|	|	|	|	1.34
26.167	0.00	0.39	0.291	O	|	|	|	|	1.33
26.250	0.00	0.39	0.288	O	|	|	|	|	1.32
26.333	0.00	0.39	0.285	O	|	|	|	|	1.31
26.417	0.00	0.39	0.283	O	|	|	|	|	1.30
26.500	0.00	0.39	0.280	O	|	|	|	|	1.29
26.583	0.00	0.39	0.277	O	|	|	|	|	1.28
26.667	0.00	0.39	0.274	O	|	|	|	|	1.27

26.750	0.00	0.39	0.272	O	|	|	|	|	1.26
26.833	0.00	0.39	0.269	O	|	|	|	|	1.24
26.917	0.00	0.39	0.266	O	|	|	|	|	1.23
27.000	0.00	0.39	0.264	O	|	|	|	|	1.22
27.083	0.00	0.39	0.261	O	|	|	|	|	1.21
27.167	0.00	0.39	0.258	O	|	|	|	|	1.20
27.250	0.00	0.39	0.255	O	|	|	|	|	1.19
27.333	0.00	0.39	0.253	O	|	|	|	|	1.18
27.417	0.00	0.39	0.250	O	|	|	|	|	1.17
27.500	0.00	0.39	0.247	O	|	|	|	|	1.16
27.583	0.00	0.39	0.245	O	|	|	|	|	1.15
27.667	0.00	0.39	0.242	O	|	|	|	|	1.14
27.750	0.00	0.39	0.239	O	|	|	|	|	1.13
27.833	0.00	0.39	0.236	O	|	|	|	|	1.11
27.917	0.00	0.39	0.234	O	|	|	|	|	1.10
28.000	0.00	0.39	0.231	O	|	|	|	|	1.09
28.083	0.00	0.39	0.228	O	|	|	|	|	1.08
28.167	0.00	0.39	0.226	O	|	|	|	|	1.07
28.250	0.00	0.39	0.223	O	|	|	|	|	1.06
28.333	0.00	0.39	0.220	O	|	|	|	|	1.05
28.417	0.00	0.39	0.218	O	|	|	|	|	1.04
28.500	0.00	0.39	0.215	O	|	|	|	|	1.03
28.583	0.00	0.39	0.212	O	|	|	|	|	1.02
28.667	0.00	0.39	0.209	O	|	|	|	|	1.01
28.750	0.00	0.39	0.207	O	|	|	|	|	0.99
28.833	0.00	0.39	0.204	O	|	|	|	|	0.98
28.917	0.00	0.38	0.201	O	|	|	|	|	0.97
29.000	0.00	0.38	0.199	O	|	|	|	|	0.96
29.083	0.00	0.37	0.196	O	|	|	|	|	0.94
29.167	0.00	0.37	0.194	O	|	|	|	|	0.93
29.250	0.00	0.36	0.191	O	|	|	|	|	0.92
29.333	0.00	0.36	0.189	O	|	|	|	|	0.91
29.417	0.00	0.35	0.186	O	|	|	|	|	0.90
29.500	0.00	0.35	0.184	O	|	|	|	|	0.88
29.583	0.00	0.34	0.181	O	|	|	|	|	0.87
29.667	0.00	0.34	0.179	O	|	|	|	|	0.86
29.750	0.00	0.33	0.177	O	|	|	|	|	0.85
29.833	0.00	0.33	0.175	O	|	|	|	|	0.84
29.917	0.00	0.33	0.172	O	|	|	|	|	0.83
30.000	0.00	0.32	0.170	O	|	|	|	|	0.82
30.083	0.00	0.32	0.168	O	|	|	|	|	0.81
30.167	0.00	0.31	0.166	O	|	|	|	|	0.80
30.250	0.00	0.31	0.164	O	|	|	|	|	0.79
30.333	0.00	0.31	0.161	O	|	|	|	|	0.78
30.417	0.00	0.30	0.159	O	|	|	|	|	0.77
30.500	0.00	0.30	0.157	O	|	|	|	|	0.76
30.583	0.00	0.29	0.155	O	|	|	|	|	0.75
30.667	0.00	0.29	0.153	O	|	|	|	|	0.74
30.750	0.00	0.29	0.151	O	|	|	|	|	0.73
30.833	0.00	0.28	0.149	O	|	|	|	|	0.72
30.917	0.00	0.28	0.147	O	|	|	|	|	0.71
31.000	0.00	0.27	0.145	O	|	|	|	|	0.70
31.083	0.00	0.27	0.144	O	|	|	|	|	0.69
31.167	0.00	0.27	0.142	O	|	|	|	|	0.68
31.250	0.00	0.26	0.140	O	|	|	|	|	0.67
31.333	0.00	0.26	0.138	O	|	|	|	|	0.66
31.417	0.00	0.26	0.136	O	|	|	|	|	0.66
31.500	0.00	0.25	0.135	O	|	|	|	|	0.65
31.583	0.00	0.25	0.133	O	|	|	|	|	0.64
31.667	0.00	0.25	0.131	O	|	|	|	|	0.63
31.750	0.00	0.24	0.129	O	|	|	|	|	0.62
31.833	0.00	0.24	0.128	O	|	|	|	|	0.61
31.917	0.00	0.24	0.126	O	|	|	|	|	0.61

32.000	0.00	0.24	0.124	O	|	|	|	|	0.60
32.083	0.00	0.23	0.123	O	|	|	|	|	0.59
32.167	0.00	0.23	0.121	O	|	|	|	|	0.58
32.250	0.00	0.23	0.120	O	|	|	|	|	0.58
32.333	0.00	0.22	0.118	O	|	|	|	|	0.57
32.417	0.00	0.22	0.117	O	|	|	|	|	0.56
32.500	0.00	0.22	0.115	O	|	|	|	|	0.55
32.583	0.00	0.21	0.114	O	|	|	|	|	0.55
32.667	0.00	0.21	0.112	O	|	|	|	|	0.54
32.750	0.00	0.21	0.111	O	|	|	|	|	0.53
32.833	0.00	0.21	0.109	O	|	|	|	|	0.53
32.917	0.00	0.20	0.108	O	|	|	|	|	0.52
33.000	0.00	0.20	0.106	O	|	|	|	|	0.51
33.083	0.00	0.20	0.105	O	|	|	|	|	0.51
33.167	0.00	0.20	0.104	O	|	|	|	|	0.50
33.250	0.00	0.19	0.102	O	|	|	|	|	0.49
33.333	0.00	0.19	0.101	O	|	|	|	|	0.49
33.417	0.00	0.19	0.100	O	|	|	|	|	0.48
33.500	0.00	0.19	0.098	O	|	|	|	|	0.47
33.583	0.00	0.18	0.097	O	|	|	|	|	0.47
33.667	0.00	0.18	0.096	O	|	|	|	|	0.46
33.750	0.00	0.18	0.095	O	|	|	|	|	0.46
33.833	0.00	0.18	0.093	O	|	|	|	|	0.45
33.917	0.00	0.17	0.092	O	|	|	|	|	0.44
34.000	0.00	0.17	0.091	O	|	|	|	|	0.44
34.083	0.00	0.17	0.090	O	|	|	|	|	0.43
34.167	0.00	0.17	0.089	O	|	|	|	|	0.43
34.250	0.00	0.17	0.088	O	|	|	|	|	0.42
34.333	0.00	0.16	0.086	O	|	|	|	|	0.42
34.417	0.00	0.16	0.085	O	|	|	|	|	0.41
34.500	0.00	0.16	0.084	O	|	|	|	|	0.40
34.583	0.00	0.16	0.083	O	|	|	|	|	0.40
34.667	0.00	0.16	0.082	O	|	|	|	|	0.39
34.750	0.00	0.15	0.081	O	|	|	|	|	0.39
34.833	0.00	0.15	0.080	O	|	|	|	|	0.38
34.917	0.00	0.15	0.079	O	|	|	|	|	0.38
35.000	0.00	0.15	0.078	O	|	|	|	|	0.37
35.083	0.00	0.15	0.077	O	|	|	|	|	0.37
35.167	0.00	0.14	0.076	O	|	|	|	|	0.36
35.250	0.00	0.14	0.075	O	|	|	|	|	0.36
35.333	0.00	0.14	0.074	O	|	|	|	|	0.36
35.417	0.00	0.14	0.073	O	|	|	|	|	0.35
35.500	0.00	0.14	0.072	O	|	|	|	|	0.35
35.583	0.00	0.13	0.071	O	|	|	|	|	0.34
35.667	0.00	0.13	0.070	O	|	|	|	|	0.34
35.750	0.00	0.13	0.069	O	|	|	|	|	0.33
35.833	0.00	0.13	0.068	O	|	|	|	|	0.33
35.917	0.00	0.13	0.067	O	|	|	|	|	0.32
36.000	0.00	0.13	0.067	O	|	|	|	|	0.32
36.083	0.00	0.12	0.066	O	|	|	|	|	0.32
36.167	0.00	0.12	0.065	O	|	|	|	|	0.31
36.250	0.00	0.12	0.064	O	|	|	|	|	0.31
36.333	0.00	0.12	0.063	O	|	|	|	|	0.30
36.417	0.00	0.12	0.062	O	|	|	|	|	0.30
36.500	0.00	0.12	0.062	O	|	|	|	|	0.30
36.583	0.00	0.11	0.061	O	|	|	|	|	0.29
36.667	0.00	0.11	0.060	O	|	|	|	|	0.29
36.750	0.00	0.11	0.059	O	|	|	|	|	0.28
36.833	0.00	0.11	0.058	O	|	|	|	|	0.28
36.917	0.00	0.11	0.058	O	|	|	|	|	0.28
37.000	0.00	0.11	0.057	O	|	|	|	|	0.27
37.083	0.00	0.11	0.056	O	|	|	|	|	0.27
37.167	0.00	0.10	0.056	O	|	|	|	|	0.27

```
37.250    0.00    0.10      0.055  O       |       |       |       |     0.26
37.333    0.00    0.10      0.054  O       |       |       |       |     0.26
37.417    0.00    0.10      0.053  O       |       |       |       |     0.26
37.500    0.00    0.10      0.053  O       |       |       |       |     0.25


      Remaining water in basin =    0.05 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   450
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        6.063 (CFS)
                   Total volume =       1.195 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station       38.100 to Point/Station        8.100
      **** STREAM ROUTING SCS CONVEX METHOD ****
      _____________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    689.30 (Ft.)
      Elevation difference =    3.45 (Ft.)
      Slope of channel =  0.005005 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     1.265(CFS)
      Nearest computed pipe diameter  =     12.00(In.)
      Calculated individual pipe flow  =     1.265(CFS)
      Normal flow depth in pipe =    6.01(In.)
      Flow top width inside pipe =   12.00(In.)
      Critical Depth =    0.47(Ft.)
      Pipe flow velocity =      3.21(Ft/s)
      Travel time through pipe =    3.58 min.


      Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     6.063(CFS)
      Nearest computed pipe diameter  =     18.00(In.)
      Calculated individual pipe flow  =     6.063(CFS)
      Normal flow depth in pipe =   12.35(In.)
      Flow top width inside pipe =   16.71(In.)
      Critical Depth =    0.95(Ft.)
      Pipe flow velocity =      4.69(Ft/s)
      Travel time through pipe =    2.45 min.


      ********************** SCS CONVEX CHANNEL ROUTING *********************
      Convex method of stream routing  data items:
      Using equation: Outflow =
```

```
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7339   Travel time =   2.45 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   2.1868
       dt(routing time-step) =   1.80 (min.),   c* =   0.9447

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T   O F   S T O R M
                  R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
             Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.5       3.0       4.5       6.1
-----------------------------------------------------------------------
  0+ 5       0.0071      0.01  O         |         |         |         |
  0+10       0.0386      0.06  O         |         |         |         |
  0+15       0.1021      0.13  O         |         |         |         |
  0+20       0.1879      0.23  |O        |         |         |         |
  0+25       0.2868      0.33  |OI       |         |         |         |
  0+30       0.3657      0.39  | O       |         |         |         |
  0+35       0.3916      0.39  | O       |         |         |         |
  0+40       0.3930      0.39  | O       |         |         |         |
  0+45       0.3931      0.39  | O       |         |         |         |
  0+50       0.3931      0.39  | O       |         |         |         |
  0+55       0.3931      0.39  | O       |         |         |         |
  1+ 0       0.3931      0.39  | O       |         |         |         |
  1+ 5       3.8230      6.06  |         |         |    O    |         I
  1+10       5.7020      5.67  |         |         |         |      O  |
  1+15       4.4996      3.73  |         |         |   I    O|         |
  1+20       2.8085      2.14  |         |   I   O |         |         |
  1+25       1.5467      1.10  |      I  O         |         |         |
  1+30       0.7859      0.54  |  I O    |         |         |         |
  1+35       0.4645      0.39  | IO      |         |         |         |
  1+40       0.3970      0.39  | O       |         |         |         |
  1+45       0.3933      0.39  | O       |         |         |         |
  1+50       0.3931      0.39  | O       |         |         |         |
  1+55       0.3931      0.39  | O       |         |         |         |
  2+ 0       0.3931      0.39  | O       |         |         |         |
  2+ 5       0.3931      0.39  | O       |         |         |         |
  2+10       0.3931      0.39  | O       |         |         |         |
  2+15       0.3931      0.39  | O       |         |         |         |
  2+20       0.3931      0.39  | O       |         |         |         |
  2+25       0.3931      0.39  | O       |         |         |         |
  2+30       0.3931      0.39  | O       |         |         |         |
  2+35       0.3931      0.39  | O       |         |         |         |
  2+40       0.3931      0.39  | O       |         |         |         |
  2+45       0.3931      0.39  | O       |         |         |         |
  2+50       0.3931      0.39  | O       |         |         |         |
  2+55       0.3931      0.39  | O       |         |         |         |
  3+ 0       0.3931      0.39  | O       |         |         |         |
  3+ 5       0.3931      0.39  | O       |         |         |         |
  3+10       0.3931      0.39  | O       |         |         |         |
  3+15       0.3931      0.39  | O       |         |         |         |
  3+20       0.3931      0.39  | O       |         |         |         |
  3+25       0.3931      0.39  | O       |         |         |         |
  3+30       0.3931      0.39  | O       |         |         |         |
  3+35       0.3931      0.39  | O       |         |         |         |
  3+40       0.3931      0.39  | O       |         |         |         |
  3+45       0.3931      0.39  | O       |         |         |         |
```

3+50	0.3931	0.39	O				
3+55	0.3931	0.39	O				
4+ 0	0.3931	0.39	O				
4+ 5	0.3931	0.39	O				
4+10	0.3931	0.39	O				
4+15	0.3931	0.39	O				
4+20	0.3931	0.39	O				
4+25	0.3931	0.39	O				
4+30	0.3931	0.39	O				
4+35	0.3931	0.39	O				
4+40	0.3931	0.39	O				
4+45	0.3931	0.39	O				
4+50	0.3931	0.39	O				
4+55	0.3931	0.39	O				
5+ 0	0.3931	0.39	O				
5+ 5	0.3931	0.39	O				
5+10	0.3931	0.39	O				
5+15	0.3931	0.39	O				
5+20	0.3931	0.39	O				
5+25	0.3931	0.39	O				
5+30	0.3931	0.39	O				
5+35	0.3931	0.39	O				
5+40	0.3931	0.39	O				
5+45	0.3931	0.39	O				
5+50	0.3931	0.39	O				
5+55	0.3931	0.39	O				
6+ 0	0.3931	0.39	O				
6+ 5	0.3931	0.39	O				
6+10	0.3931	0.39	O				
6+15	0.3931	0.39	O				
6+20	0.3931	0.39	O				
6+25	0.3931	0.39	O				
6+30	0.3931	0.39	O				
6+35	0.3931	0.39	O				
6+40	0.3931	0.39	O				
6+45	0.3931	0.39	O				
6+50	0.3931	0.39	O				
6+55	0.3931	0.39	O				
7+ 0	0.3931	0.39	O				
7+ 5	0.3931	0.39	O				
7+10	0.3931	0.39	O				
7+15	0.3931	0.39	O				
7+20	0.3931	0.39	O				
7+25	0.3931	0.39	O				
7+30	0.3931	0.39	O				
7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				
8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3931	0.39	O				
8+35	0.3931	0.39	O				
8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				

9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3931	0.39	O				
10+50	0.3931	0.39	O				
10+55	0.3931	0.39	O				
11+ 0	0.3931	0.39	O				
11+ 5	0.3931	0.39	O				
11+10	0.3931	0.39	O				
11+15	0.3931	0.39	O				
11+20	0.3931	0.39	O				
11+25	0.3931	0.39	O				
11+30	0.3931	0.39	O				
11+35	0.3931	0.39	O				
11+40	0.3931	0.39	O				
11+45	0.3931	0.39	O				
11+50	0.3931	0.39	O				
11+55	0.3931	0.39	O				
12+ 0	0.3931	0.39	O				
12+ 5	0.3931	0.39	O				
12+10	0.3931	0.39	O				
12+15	0.3931	0.39	O				
12+20	0.3931	0.39	O				
12+25	0.3931	0.39	O				
12+30	0.3931	0.39	O				
12+35	0.3931	0.39	O				
12+40	0.3931	0.39	O				
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12+50	0.3931	0.39	O				
12+55	0.3931	0.39	O				
13+ 0	0.3931	0.39	O				
13+ 5	0.3931	0.39	O				
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13+20	0.3931	0.39	O				
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13+50	0.3931	0.39	O				
13+55	0.3931	0.39	O				
14+ 0	0.3931	0.39	O				
14+ 5	0.3931	0.39	O				
14+10	0.3931	0.39	O				
14+15	0.3931	0.39	O				

14+20	0.3931	0.39	O				
14+25	0.3931	0.39	O				
14+30	0.3931	0.39	O				
14+35	0.3931	0.39	O				
14+40	0.3931	0.39	O				
14+45	0.3931	0.39	O				
14+50	0.3931	0.39	O				
14+55	0.3931	0.39	O				
15+ 0	0.3931	0.39	O				
15+ 5	0.3931	0.39	O				
15+10	0.3931	0.39	O				
15+15	0.3931	0.39	O				
15+20	0.3931	0.39	O				
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15+35	0.3931	0.39	O				
15+40	0.3931	0.39	O				
15+45	0.3931	0.39	O				
15+50	0.3931	0.39	O				
15+55	0.3931	0.39	O				
16+ 0	0.3931	0.39	O				
16+ 5	0.3931	0.39	O				
16+10	0.3931	0.39	O				
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16+25	0.3931	0.39	O				
16+30	0.3931	0.39	O				
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16+40	0.3931	0.39	O				
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17+30	0.3931	0.39	O				
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17+40	0.3931	0.39	O				
17+45	0.3931	0.39	O				
17+50	0.3931	0.39	O				
17+55	0.3931	0.39	O				
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18+45	0.3931	0.39	O				
18+50	0.3931	0.39	O				
18+55	0.3931	0.39	O				
19+ 0	0.3931	0.39	O				
19+ 5	0.3931	0.39	O				
19+10	0.3931	0.39	O				
19+15	0.3931	0.39	O				
19+20	0.3931	0.39	O				
19+25	0.3931	0.39	O				
19+30	0.3931	0.39	O				

19+35	0.3931	0.39	O				
19+40	0.3931	0.39	O				
19+45	0.3931	0.39	O				
19+50	0.3931	0.39	O				
19+55	0.3931	0.39	O				
20+ 0	0.3931	0.39	O				
20+ 5	0.3931	0.39	O				
20+10	0.3931	0.39	O				
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20+50	0.3931	0.39	O				
20+55	0.3931	0.39	O				
21+ 0	0.3931	0.39	O				
21+ 5	0.3931	0.39	O				
21+10	0.3931	0.39	O				
21+15	0.3931	0.39	O				
21+20	0.3931	0.39	O				
21+25	0.3931	0.39	O				
21+30	0.3931	0.39	O				
21+35	0.3931	0.39	O				
21+40	0.3931	0.39	O				
21+45	0.3931	0.39	O				
21+50	0.3931	0.39	O				
21+55	0.3931	0.39	O				
22+ 0	0.3931	0.39	O				
22+ 5	0.3931	0.39	O				
22+10	0.3931	0.39	O				
22+15	0.3931	0.39	O				
22+20	0.3931	0.39	O				
22+25	0.3931	0.39	O				
22+30	0.3931	0.39	O				
22+35	0.3931	0.39	O				
22+40	0.3931	0.39	O				
22+45	0.3931	0.39	O				
22+50	0.3931	0.39	O				
22+55	0.3931	0.39	O				
23+ 0	0.3931	0.39	O				
23+ 5	0.3931	0.39	O				
23+10	0.3931	0.39	O				
23+15	0.3931	0.39	O				
23+20	0.3931	0.39	O				
23+25	0.3931	0.39	O				
23+30	0.3931	0.39	O				
23+35	0.3931	0.39	O				
23+40	0.3931	0.39	O				
23+45	0.3931	0.39	O				
23+50	0.3931	0.39	O				
23+55	0.3931	0.39	O				
24+ 0	0.3931	0.39	O				
24+ 5	0.3931	0.39	O				
24+10	0.3931	0.39	O				
24+15	0.3931	0.39	O				
24+20	0.3931	0.39	O				
24+25	0.3931	0.39	O				
24+30	0.3931	0.39	O				
24+35	0.3931	0.39	O				
24+40	0.3931	0.39	O				
24+45	0.3931	0.39	O				

24+50	0.3931	0.39	O				
24+55	0.3931	0.39	O				
25+ 0	0.3931	0.39	O				
25+ 5	0.3931	0.39	O				
25+10	0.3931	0.39	O				
25+15	0.3931	0.39	O				
25+20	0.3931	0.39	O				
25+25	0.3931	0.39	O				
25+30	0.3931	0.39	O				
25+35	0.3931	0.39	O				
25+40	0.3931	0.39	O				
25+45	0.3931	0.39	O				
25+50	0.3931	0.39	O				
25+55	0.3931	0.39	O				
26+ 0	0.3931	0.39	O				
26+ 5	0.3931	0.39	O				
26+10	0.3931	0.39	O				
26+15	0.3931	0.39	O				
26+20	0.3931	0.39	O				
26+25	0.3931	0.39	O				
26+30	0.3931	0.39	O				
26+35	0.3931	0.39	O				
26+40	0.3931	0.39	O				
26+45	0.3931	0.39	O				
26+50	0.3931	0.39	O				
26+55	0.3931	0.39	O				
27+ 0	0.3931	0.39	O				
27+ 5	0.3931	0.39	O				
27+10	0.3931	0.39	O				
27+15	0.3931	0.39	O				
27+20	0.3931	0.39	O				
27+25	0.3931	0.39	O				
27+30	0.3931	0.39	O				
27+35	0.3931	0.39	O				
27+40	0.3931	0.39	O				
27+45	0.3931	0.39	O				
27+50	0.3931	0.39	O				
27+55	0.3931	0.39	O				
28+ 0	0.3931	0.39	O				
28+ 5	0.3931	0.39	O				
28+10	0.3931	0.39	O				
28+15	0.3931	0.39	O				
28+20	0.3931	0.39	O				
28+25	0.3931	0.39	O				
28+30	0.3931	0.39	O				
28+35	0.3931	0.39	O				
28+40	0.3931	0.39	O				
28+45	0.3916	0.39	O				
28+50	0.3876	0.39	O				
28+55	0.3827	0.38	O				
29+ 0	0.3777	0.38	O				
29+ 5	0.3729	0.37	O				
29+10	0.3680	0.37	O				
29+15	0.3633	0.36	O				
29+20	0.3586	0.36	O				
29+25	0.3539	0.35	O				
29+30	0.3494	0.35	O				
29+35	0.3449	0.34	O				
29+40	0.3404	0.34	O				
29+45	0.3360	0.33	O				
29+50	0.3316	0.33	O				
29+55	0.3274	0.33	O				
30+ 0	0.3231	0.32	O				

30+ 5	0.3189	0.32	| O	|	|	|	|
30+10	0.3148	0.31	| O	|	|	|	|
30+15	0.3108	0.31	| O	|	|	|	|
30+20	0.3067	0.31	| O	|	|	|	|
30+25	0.3028	0.30	|O	|	|	|	|
30+30	0.2989	0.30	|O	|	|	|	|
30+35	0.2950	0.29	|O	|	|	|	|
30+40	0.2912	0.29	|O	|	|	|	|
30+45	0.2874	0.29	|O	|	|	|	|
30+50	0.2837	0.28	|O	|	|	|	|
30+55	0.2800	0.28	|O	|	|	|	|
31+ 0	0.2764	0.27	|O	|	|	|	|
31+ 5	0.2728	0.27	|O	|	|	|	|
31+10	0.2693	0.27	|O	|	|	|	|
31+15	0.2658	0.26	|O	|	|	|	|
31+20	0.2624	0.26	|O	|	|	|	|
31+25	0.2590	0.26	|O	|	|	|	|
31+30	0.2556	0.25	|O	|	|	|	|
31+35	0.2523	0.25	|O	|	|	|	|
31+40	0.2491	0.25	|O	|	|	|	|
31+45	0.2459	0.24	|O	|	|	|	|
31+50	0.2427	0.24	|O	|	|	|	|
31+55	0.2395	0.24	|O	|	|	|	|
32+ 0	0.2364	0.24	|O	|	|	|	|
32+ 5	0.2334	0.23	|O	|	|	|	|
32+10	0.2304	0.23	|O	|	|	|	|
32+15	0.2274	0.23	|O	|	|	|	|
32+20	0.2244	0.22	|O	|	|	|	|
32+25	0.2215	0.22	|O	|	|	|	|
32+30	0.2187	0.22	|O	|	|	|	|
32+35	0.2158	0.21	|O	|	|	|	|
32+40	0.2131	0.21	|O	|	|	|	|
32+45	0.2103	0.21	|O	|	|	|	|
32+50	0.2076	0.21	|O	|	|	|	|
32+55	0.2049	0.20	|O	|	|	|	|
33+ 0	0.2023	0.20	|O	|	|	|	|
33+ 5	0.1996	0.20	|O	|	|	|	|
33+10	0.1971	0.20	|O	|	|	|	|
33+15	0.1945	0.19	|O	|	|	|	|
33+20	0.1920	0.19	|O	|	|	|	|
33+25	0.1895	0.19	|O	|	|	|	|
33+30	0.1871	0.19	|O	|	|	|	|
33+35	0.1846	0.18	|O	|	|	|	|
33+40	0.1823	0.18	|O	|	|	|	|
33+45	0.1799	0.18	|O	|	|	|	|
33+50	0.1776	0.18	|O	|	|	|	|
33+55	0.1753	0.17	|O	|	|	|	|
34+ 0	0.1730	0.17	|O	|	|	|	|
34+ 5	0.1708	0.17	|O	|	|	|	|
34+10	0.1686	0.17	|O	|	|	|	|
34+15	0.1664	0.17	|O	|	|	|	|
34+20	0.1642	0.16	|O	|	|	|	|
34+25	0.1621	0.16	|O	|	|	|	|
34+30	0.1600	0.16	|O	|	|	|	|
34+35	0.1579	0.16	|O	|	|	|	|
34+40	0.1559	0.16	|O	|	|	|	|
34+45	0.1539	0.15	|O	|	|	|	|
34+50	0.1519	0.15	IO	|	|	|	|
34+55	0.1499	0.15	O	|	|	|	|
35+ 0	0.1480	0.15	O	|	|	|	|
35+ 5	0.1461	0.15	O	|	|	|	|
35+10	0.1442	0.14	O	|	|	|	|
35+15	0.1423	0.14	O	|	|	|	|

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35+20       0.1405      0.14  O         |         |         |         |
35+25       0.1387      0.14  O         |         |         |         |
35+30       0.1369      0.14  O         |         |         |         |
35+35       0.1351      0.13  O         |         |         |         |
35+40       0.1334      0.13  O         |         |         |         |
35+45       0.1316      0.13  O         |         |         |         |
35+50       0.1299      0.13  O         |         |         |         |
35+55       0.1283      0.13  O         |         |         |         |
36+ 0       0.1266      0.13  O         |         |         |         |
36+ 5       0.1250      0.12  O         |         |         |         |
36+10       0.1233      0.12  O         |         |         |         |
36+15       0.1217      0.12  O         |         |         |         |
36+20       0.1202      0.12  O         |         |         |         |
36+25       0.1186      0.12  O         |         |         |         |
36+30       0.1171      0.12  O         |         |         |         |
36+35       0.1156      0.11  O         |         |         |         |
36+40       0.1141      0.11  O         |         |         |         |
36+45       0.1126      0.11  O         |         |         |         |
36+50       0.1111      0.11  O         |         |         |         |
36+55       0.1097      0.11  O         |         |         |         |
37+ 0       0.1083      0.11  O         |         |         |         |
37+ 5       0.1069      0.11  O         |         |         |         |
37+10       0.1055      0.10  O         |         |         |         |
37+15       0.1041      0.10  O         |         |         |         |
37+20       0.1028      0.10  O         |         |         |         |
37+25       0.1015      0.10  O         |         |         |         |
37+30       0.1002      0.10  O         |         |         |         |
37+35       0.0394      0.00  O         |         |         |         |
37+40       0.0022      0.00  O         |         |         |         |
37+45       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA***************************
                  Number of intervals =   453
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        5.702 (CFS)
                  Total volume =       1.195 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station       38.100 to Point/Station        8.100
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      _____________________________________________________________________
      Current stream hydrograph saved in file 27259PONDA101.rte
      ****************************HYDROGRAPH DATA***************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA A (Pond A)- Q10yr3hr(ONSITE)- Unit Hydrograph Method
----------------------------------------------------------------------


Program License Serial Number 4066

----------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHA310.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    41
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       21.157 (CFS)
             Total volume =       1.733 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       40.000 to Point/Station       38.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    2.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.00(Ft.) Capacity = 0.39(CFS)

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 4.00(Ft.) Capacity = 0.39(CFS)

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.00(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 3.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.50(Ft.) Capacity = 39.99(CFS)

Total outflow at this depth = 40.38(CFS)

Total number of inflow hydrograph intervals = 41
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.208	0.393	0.207	0.209
2.000	0.457	0.393	0.456	0.458
3.000	0.751	0.393	0.750	0.752
4.000	1.091	0.393	1.090	1.092
5.000	1.480	40.379	1.341	1.619

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 5.3 10.58 15.87 21.16	Depth (Ft.)
0.083	0.84	0.01	0.003	OI	0.01
0.167	1.93	0.02	0.012	O I	0.06
0.250	1.97	0.05	0.025	O I	0.12
0.333	2.23	0.07	0.040	O I	0.19
0.417	2.79	0.11	0.056	O I	0.27
0.500	3.25	0.14	0.076	O I	0.37
0.583	3.40	0.19	0.098	O I	0.47
0.667	3.42	0.23	0.120	O I	0.58
0.750	3.80	0.27	0.143	O I	0.69
0.833	3.55	0.31	0.166	O I	0.80
0.917	3.26	0.35	0.188	O I	0.90
1.000	3.54	0.39	0.208	O I	1.00
1.083	4.26	0.39	0.233	O I	1.10
1.167	4.90	0.39	0.261	O I	1.21
1.250	5.07	0.39	0.293	O I	1.34
1.333	4.92	0.39	0.325	O I	1.47
1.417	5.32	0.39	0.357	O I	1.60
1.500	6.25	0.39	0.394	O I	1.75
1.583	6.23	0.39	0.435	O I	1.91
1.667	6.24	0.39	0.475	O I	2.06
1.750	7.28	0.39	0.519	O I	2.21
1.833	8.01	0.39	0.569	O I	2.38
1.917	7.73	0.39	0.620	O I	2.56
2.000	7.58	0.39	0.670	O I	2.73
2.083	7.79	0.39	0.720	O I	2.90
2.167	9.15	0.39	0.776	O I	3.07
2.250	11.66	0.39	0.845	O I	3.28
2.333	11.54	0.39	0.922	O I	3.50
2.417	13.44	0.39	1.005	O I	3.75
2.500	18.47	2.04	1.107	| O I	4.04
2.583	21.16	11.33	1.197	| O I	4.27
2.667	20.49	16.29	1.246	| O I	4.40
2.750	13.42	16.64	1.249	| I O	4.41
2.833	7.03	13.28	1.216	| I O	4.32
2.917	5.18	9.53	1.180	| I O	4.23
3.000	3.10	6.71	1.152	| I O	4.16
3.083	0.93	4.26	1.129	|I O	4.10
3.167	0.33	2.36	1.110	I O	4.05
3.250	0.13	1.25	1.099	IO	4.02
3.333	0.04	0.64	1.093	O	4.01
3.417	0.00	0.39	1.090	O	4.00
3.500	0.00	0.39	1.087	O	3.99
3.583	0.00	0.39	1.085	O	3.98
3.667	0.00	0.39	1.082	O	3.97
3.750	0.00	0.39	1.079	O	3.97
3.833	0.00	0.39	1.076	O	3.96
3.917	0.00	0.39	1.074	O	3.95
4.000	0.00	0.39	1.071	O	3.94
4.083	0.00	0.39	1.068	O	3.93
4.167	0.00	0.39	1.066	O	3.93
4.250	0.00	0.39	1.063	O	3.92
4.333	0.00	0.39	1.060	O	3.91
4.417	0.00	0.39	1.057	O	3.90
4.500	0.00	0.39	1.055	O	3.89
4.583	0.00	0.39	1.052	O	3.89
4.667	0.00	0.39	1.049	O	3.88
4.750	0.00	0.39	1.047	O	3.87
4.833	0.00	0.39	1.044	O	3.86

4.917	0.00	0.39	1.041	O	|	|	|	|	3.85
5.000	0.00	0.39	1.039	O	|	|	|	|	3.85
5.083	0.00	0.39	1.036	O	|	|	|	|	3.84
5.167	0.00	0.39	1.033	O	|	|	|	|	3.83
5.250	0.00	0.39	1.030	O	|	|	|	|	3.82
5.333	0.00	0.39	1.028	O	|	|	|	|	3.81
5.417	0.00	0.39	1.025	O	|	|	|	|	3.81
5.500	0.00	0.39	1.022	O	|	|	|	|	3.80
5.583	0.00	0.39	1.020	O	|	|	|	|	3.79
5.667	0.00	0.39	1.017	O	|	|	|	|	3.78
5.750	0.00	0.39	1.014	O	|	|	|	|	3.77
5.833	0.00	0.39	1.011	O	|	|	|	|	3.77
5.917	0.00	0.39	1.009	O	|	|	|	|	3.76
6.000	0.00	0.39	1.006	O	|	|	|	|	3.75
6.083	0.00	0.39	1.003	O	|	|	|	|	3.74
6.167	0.00	0.39	1.001	O	|	|	|	|	3.73
6.250	0.00	0.39	0.998	O	|	|	|	|	3.73
6.333	0.00	0.39	0.995	O	|	|	|	|	3.72
6.417	0.00	0.39	0.993	O	|	|	|	|	3.71
6.500	0.00	0.39	0.990	O	|	|	|	|	3.70
6.583	0.00	0.39	0.987	O	|	|	|	|	3.69
6.667	0.00	0.39	0.984	O	|	|	|	|	3.69
6.750	0.00	0.39	0.982	O	|	|	|	|	3.68
6.833	0.00	0.39	0.979	O	|	|	|	|	3.67
6.917	0.00	0.39	0.976	O	|	|	|	|	3.66
7.000	0.00	0.39	0.974	O	|	|	|	|	3.65
7.083	0.00	0.39	0.971	O	|	|	|	|	3.65
7.167	0.00	0.39	0.968	O	|	|	|	|	3.64
7.250	0.00	0.39	0.965	O	|	|	|	|	3.63
7.333	0.00	0.39	0.963	O	|	|	|	|	3.62
7.417	0.00	0.39	0.960	O	|	|	|	|	3.61
7.500	0.00	0.39	0.957	O	|	|	|	|	3.61
7.583	0.00	0.39	0.955	O	|	|	|	|	3.60
7.667	0.00	0.39	0.952	O	|	|	|	|	3.59
7.750	0.00	0.39	0.949	O	|	|	|	|	3.58
7.833	0.00	0.39	0.946	O	|	|	|	|	3.57
7.917	0.00	0.39	0.944	O	|	|	|	|	3.57
8.000	0.00	0.39	0.941	O	|	|	|	|	3.56
8.083	0.00	0.39	0.938	O	|	|	|	|	3.55
8.167	0.00	0.39	0.936	O	|	|	|	|	3.54
8.250	0.00	0.39	0.933	O	|	|	|	|	3.54
8.333	0.00	0.39	0.930	O	|	|	|	|	3.53
8.417	0.00	0.39	0.928	O	|	|	|	|	3.52
8.500	0.00	0.39	0.925	O	|	|	|	|	3.51
8.583	0.00	0.39	0.922	O	|	|	|	|	3.50
8.667	0.00	0.39	0.919	O	|	|	|	|	3.50
8.750	0.00	0.39	0.917	O	|	|	|	|	3.49
8.833	0.00	0.39	0.914	O	|	|	|	|	3.48
8.917	0.00	0.39	0.911	O	|	|	|	|	3.47
9.000	0.00	0.39	0.909	O	|	|	|	|	3.46
9.083	0.00	0.39	0.906	O	|	|	|	|	3.46
9.167	0.00	0.39	0.903	O	|	|	|	|	3.45
9.250	0.00	0.39	0.900	O	|	|	|	|	3.44
9.333	0.00	0.39	0.898	O	|	|	|	|	3.43
9.417	0.00	0.39	0.895	O	|	|	|	|	3.42
9.500	0.00	0.39	0.892	O	|	|	|	|	3.42
9.583	0.00	0.39	0.890	O	|	|	|	|	3.41
9.667	0.00	0.39	0.887	O	|	|	|	|	3.40
9.750	0.00	0.39	0.884	O	|	|	|	|	3.39
9.833	0.00	0.39	0.882	O	|	|	|	|	3.38
9.917	0.00	0.39	0.879	O	|	|	|	|	3.38
10.000	0.00	0.39	0.876	O	|	|	|	|	3.37
10.083	0.00	0.39	0.873	O	|	|	|	|	3.36

10.167	0.00	0.39	0.871	O	|	|	|	|	3.35
10.250	0.00	0.39	0.868	O	|	|	|	|	3.34
10.333	0.00	0.39	0.865	O	|	|	|	|	3.34
10.417	0.00	0.39	0.863	O	|	|	|	|	3.33
10.500	0.00	0.39	0.860	O	|	|	|	|	3.32
10.583	0.00	0.39	0.857	O	|	|	|	|	3.31
10.667	0.00	0.39	0.854	O	|	|	|	|	3.30
10.750	0.00	0.39	0.852	O	|	|	|	|	3.30
10.833	0.00	0.39	0.849	O	|	|	|	|	3.29
10.917	0.00	0.39	0.846	O	|	|	|	|	3.28
11.000	0.00	0.39	0.844	O	|	|	|	|	3.27
11.083	0.00	0.39	0.841	O	|	|	|	|	3.26
11.167	0.00	0.39	0.838	O	|	|	|	|	3.26
11.250	0.00	0.39	0.836	O	|	|	|	|	3.25
11.333	0.00	0.39	0.833	O	|	|	|	|	3.24
11.417	0.00	0.39	0.830	O	|	|	|	|	3.23
11.500	0.00	0.39	0.827	O	|	|	|	|	3.22
11.583	0.00	0.39	0.825	O	|	|	|	|	3.22
11.667	0.00	0.39	0.822	O	|	|	|	|	3.21
11.750	0.00	0.39	0.819	O	|	|	|	|	3.20
11.833	0.00	0.39	0.817	O	|	|	|	|	3.19
11.917	0.00	0.39	0.814	O	|	|	|	|	3.18
12.000	0.00	0.39	0.811	O	|	|	|	|	3.18
12.083	0.00	0.39	0.808	O	|	|	|	|	3.17
12.167	0.00	0.39	0.806	O	|	|	|	|	3.16
12.250	0.00	0.39	0.803	O	|	|	|	|	3.15
12.333	0.00	0.39	0.800	O	|	|	|	|	3.15
12.417	0.00	0.39	0.798	O	|	|	|	|	3.14
12.500	0.00	0.39	0.795	O	|	|	|	|	3.13
12.583	0.00	0.39	0.792	O	|	|	|	|	3.12
12.667	0.00	0.39	0.789	O	|	|	|	|	3.11
12.750	0.00	0.39	0.787	O	|	|	|	|	3.11
12.833	0.00	0.39	0.784	O	|	|	|	|	3.10
12.917	0.00	0.39	0.781	O	|	|	|	|	3.09
13.000	0.00	0.39	0.779	O	|	|	|	|	3.08
13.083	0.00	0.39	0.776	O	|	|	|	|	3.07
13.167	0.00	0.39	0.773	O	|	|	|	|	3.07
13.250	0.00	0.39	0.771	O	|	|	|	|	3.06
13.333	0.00	0.39	0.768	O	|	|	|	|	3.05
13.417	0.00	0.39	0.765	O	|	|	|	|	3.04
13.500	0.00	0.39	0.762	O	|	|	|	|	3.03
13.583	0.00	0.39	0.760	O	|	|	|	|	3.03
13.667	0.00	0.39	0.757	O	|	|	|	|	3.02
13.750	0.00	0.39	0.754	O	|	|	|	|	3.01
13.833	0.00	0.39	0.752	O	|	|	|	|	3.00
13.917	0.00	0.39	0.749	O	|	|	|	|	2.99
14.000	0.00	0.39	0.746	O	|	|	|	|	2.98
14.083	0.00	0.39	0.743	O	|	|	|	|	2.97
14.167	0.00	0.39	0.741	O	|	|	|	|	2.97
14.250	0.00	0.39	0.738	O	|	|	|	|	2.96
14.333	0.00	0.39	0.735	O	|	|	|	|	2.95
14.417	0.00	0.39	0.733	O	|	|	|	|	2.94
14.500	0.00	0.39	0.730	O	|	|	|	|	2.93
14.583	0.00	0.39	0.727	O	|	|	|	|	2.92
14.667	0.00	0.39	0.725	O	|	|	|	|	2.91
14.750	0.00	0.39	0.722	O	|	|	|	|	2.90
14.833	0.00	0.39	0.719	O	|	|	|	|	2.89
14.917	0.00	0.39	0.716	O	|	|	|	|	2.88
15.000	0.00	0.39	0.714	O	|	|	|	|	2.87
15.083	0.00	0.39	0.711	O	|	|	|	|	2.86
15.167	0.00	0.39	0.708	O	|	|	|	|	2.85
15.250	0.00	0.39	0.706	O	|	|	|	|	2.85
15.333	0.00	0.39	0.703	O	|	|	|	|	2.84

15.417	0.00	0.39	0.700	O	|	|	|	|	2.83
15.500	0.00	0.39	0.697	O	|	|	|	|	2.82
15.583	0.00	0.39	0.695	O	|	|	|	|	2.81
15.667	0.00	0.39	0.692	O	|	|	|	|	2.80
15.750	0.00	0.39	0.689	O	|	|	|	|	2.79
15.833	0.00	0.39	0.687	O	|	|	|	|	2.78
15.917	0.00	0.39	0.684	O	|	|	|	|	2.77
16.000	0.00	0.39	0.681	O	|	|	|	|	2.76
16.083	0.00	0.39	0.678	O	|	|	|	|	2.75
16.167	0.00	0.39	0.676	O	|	|	|	|	2.74
16.250	0.00	0.39	0.673	O	|	|	|	|	2.73
16.333	0.00	0.39	0.670	O	|	|	|	|	2.73
16.417	0.00	0.39	0.668	O	|	|	|	|	2.72
16.500	0.00	0.39	0.665	O	|	|	|	|	2.71
16.583	0.00	0.39	0.662	O	|	|	|	|	2.70
16.667	0.00	0.39	0.660	O	|	|	|	|	2.69
16.750	0.00	0.39	0.657	O	|	|	|	|	2.68
16.833	0.00	0.39	0.654	O	|	|	|	|	2.67
16.917	0.00	0.39	0.651	O	|	|	|	|	2.66
17.000	0.00	0.39	0.649	O	|	|	|	|	2.65
17.083	0.00	0.39	0.646	O	|	|	|	|	2.64
17.167	0.00	0.39	0.643	O	|	|	|	|	2.63
17.250	0.00	0.39	0.641	O	|	|	|	|	2.62
17.333	0.00	0.39	0.638	O	|	|	|	|	2.62
17.417	0.00	0.39	0.635	O	|	|	|	|	2.61
17.500	0.00	0.39	0.632	O	|	|	|	|	2.60
17.583	0.00	0.39	0.630	O	|	|	|	|	2.59
17.667	0.00	0.39	0.627	O	|	|	|	|	2.58
17.750	0.00	0.39	0.624	O	|	|	|	|	2.57
17.833	0.00	0.39	0.622	O	|	|	|	|	2.56
17.917	0.00	0.39	0.619	O	|	|	|	|	2.55
18.000	0.00	0.39	0.616	O	|	|	|	|	2.54
18.083	0.00	0.39	0.614	O	|	|	|	|	2.53
18.167	0.00	0.39	0.611	O	|	|	|	|	2.52
18.250	0.00	0.39	0.608	O	|	|	|	|	2.51
18.333	0.00	0.39	0.605	O	|	|	|	|	2.50
18.417	0.00	0.39	0.603	O	|	|	|	|	2.50
18.500	0.00	0.39	0.600	O	|	|	|	|	2.49
18.583	0.00	0.39	0.597	O	|	|	|	|	2.48
18.667	0.00	0.39	0.595	O	|	|	|	|	2.47
18.750	0.00	0.39	0.592	O	|	|	|	|	2.46
18.833	0.00	0.39	0.589	O	|	|	|	|	2.45
18.917	0.00	0.39	0.586	O	|	|	|	|	2.44
19.000	0.00	0.39	0.584	O	|	|	|	|	2.43
19.083	0.00	0.39	0.581	O	|	|	|	|	2.42
19.167	0.00	0.39	0.578	O	|	|	|	|	2.41
19.250	0.00	0.39	0.576	O	|	|	|	|	2.40
19.333	0.00	0.39	0.573	O	|	|	|	|	2.39
19.417	0.00	0.39	0.570	O	|	|	|	|	2.39
19.500	0.00	0.39	0.568	O	|	|	|	|	2.38
19.583	0.00	0.39	0.565	O	|	|	|	|	2.37
19.667	0.00	0.39	0.562	O	|	|	|	|	2.36
19.750	0.00	0.39	0.559	O	|	|	|	|	2.35
19.833	0.00	0.39	0.557	O	|	|	|	|	2.34
19.917	0.00	0.39	0.554	O	|	|	|	|	2.33
20.000	0.00	0.39	0.551	O	|	|	|	|	2.32
20.083	0.00	0.39	0.549	O	|	|	|	|	2.31
20.167	0.00	0.39	0.546	O	|	|	|	|	2.30
20.250	0.00	0.39	0.543	O	|	|	|	|	2.29
20.333	0.00	0.39	0.540	O	|	|	|	|	2.28
20.417	0.00	0.39	0.538	O	|	|	|	|	2.27
20.500	0.00	0.39	0.535	O	|	|	|	|	2.27
20.583	0.00	0.39	0.532	O	|	|	|	|	2.26

20.667	0.00	0.39	0.530	O	|	|	|	|	2.25
20.750	0.00	0.39	0.527	O	|	|	|	|	2.24
20.833	0.00	0.39	0.524	O	|	|	|	|	2.23
20.917	0.00	0.39	0.521	O	|	|	|	|	2.22
21.000	0.00	0.39	0.519	O	|	|	|	|	2.21
21.083	0.00	0.39	0.516	O	|	|	|	|	2.20
21.167	0.00	0.39	0.513	O	|	|	|	|	2.19
21.250	0.00	0.39	0.511	O	|	|	|	|	2.18
21.333	0.00	0.39	0.508	O	|	|	|	|	2.17
21.417	0.00	0.39	0.505	O	|	|	|	|	2.16
21.500	0.00	0.39	0.503	O	|	|	|	|	2.15
21.583	0.00	0.39	0.500	O	|	|	|	|	2.15
21.667	0.00	0.39	0.497	O	|	|	|	|	2.14
21.750	0.00	0.39	0.494	O	|	|	|	|	2.13
21.833	0.00	0.39	0.492	O	|	|	|	|	2.12
21.917	0.00	0.39	0.489	O	|	|	|	|	2.11
22.000	0.00	0.39	0.486	O	|	|	|	|	2.10
22.083	0.00	0.39	0.484	O	|	|	|	|	2.09
22.167	0.00	0.39	0.481	O	|	|	|	|	2.08
22.250	0.00	0.39	0.478	O	|	|	|	|	2.07
22.333	0.00	0.39	0.475	O	|	|	|	|	2.06
22.417	0.00	0.39	0.473	O	|	|	|	|	2.05
22.500	0.00	0.39	0.470	O	|	|	|	|	2.04
22.583	0.00	0.39	0.467	O	|	|	|	|	2.04
22.667	0.00	0.39	0.465	O	|	|	|	|	2.03
22.750	0.00	0.39	0.462	O	|	|	|	|	2.02
22.833	0.00	0.39	0.459	O	|	|	|	|	2.01
22.917	0.00	0.39	0.457	O	|	|	|	|	2.00
23.000	0.00	0.39	0.454	O	|	|	|	|	1.99
23.083	0.00	0.39	0.451	O	|	|	|	|	1.98
23.167	0.00	0.39	0.448	O	|	|	|	|	1.97
23.250	0.00	0.39	0.446	O	|	|	|	|	1.95
23.333	0.00	0.39	0.443	O	|	|	|	|	1.94
23.417	0.00	0.39	0.440	O	|	|	|	|	1.93
23.500	0.00	0.39	0.438	O	|	|	|	|	1.92
23.583	0.00	0.39	0.435	O	|	|	|	|	1.91
23.667	0.00	0.39	0.432	O	|	|	|	|	1.90
23.750	0.00	0.39	0.429	O	|	|	|	|	1.89
23.833	0.00	0.39	0.427	O	|	|	|	|	1.88
23.917	0.00	0.39	0.424	O	|	|	|	|	1.87
24.000	0.00	0.39	0.421	O	|	|	|	|	1.86
24.083	0.00	0.39	0.419	O	|	|	|	|	1.85
24.167	0.00	0.39	0.416	O	|	|	|	|	1.83
24.250	0.00	0.39	0.413	O	|	|	|	|	1.82
24.333	0.00	0.39	0.411	O	|	|	|	|	1.81
24.417	0.00	0.39	0.408	O	|	|	|	|	1.80
24.500	0.00	0.39	0.405	O	|	|	|	|	1.79
24.583	0.00	0.39	0.402	O	|	|	|	|	1.78
24.667	0.00	0.39	0.400	O	|	|	|	|	1.77
24.750	0.00	0.39	0.397	O	|	|	|	|	1.76
24.833	0.00	0.39	0.394	O	|	|	|	|	1.75
24.917	0.00	0.39	0.392	O	|	|	|	|	1.74
25.000	0.00	0.39	0.389	O	|	|	|	|	1.73
25.083	0.00	0.39	0.386	O	|	|	|	|	1.72
25.167	0.00	0.39	0.383	O	|	|	|	|	1.70
25.250	0.00	0.39	0.381	O	|	|	|	|	1.69
25.333	0.00	0.39	0.378	O	|	|	|	|	1.68
25.417	0.00	0.39	0.375	O	|	|	|	|	1.67
25.500	0.00	0.39	0.373	O	|	|	|	|	1.66
25.583	0.00	0.39	0.370	O	|	|	|	|	1.65
25.667	0.00	0.39	0.367	O	|	|	|	|	1.64
25.750	0.00	0.39	0.364	O	|	|	|	|	1.63
25.833	0.00	0.39	0.362	O	|	|	|	|	1.62

25.917	0.00	0.39	0.359	O	|	|	|	|	1.61
26.000	0.00	0.39	0.356	O	|	|	|	|	1.60
26.083	0.00	0.39	0.354	O	|	|	|	|	1.58
26.167	0.00	0.39	0.351	O	|	|	|	|	1.57
26.250	0.00	0.39	0.348	O	|	|	|	|	1.56
26.333	0.00	0.39	0.346	O	|	|	|	|	1.55
26.417	0.00	0.39	0.343	O	|	|	|	|	1.54
26.500	0.00	0.39	0.340	O	|	|	|	|	1.53
26.583	0.00	0.39	0.337	O	|	|	|	|	1.52
26.667	0.00	0.39	0.335	O	|	|	|	|	1.51
26.750	0.00	0.39	0.332	O	|	|	|	|	1.50
26.833	0.00	0.39	0.329	O	|	|	|	|	1.49
26.917	0.00	0.39	0.327	O	|	|	|	|	1.48
27.000	0.00	0.39	0.324	O	|	|	|	|	1.47
27.083	0.00	0.39	0.321	O	|	|	|	|	1.45
27.167	0.00	0.39	0.318	O	|	|	|	|	1.44
27.250	0.00	0.39	0.316	O	|	|	|	|	1.43
27.333	0.00	0.39	0.313	O	|	|	|	|	1.42
27.417	0.00	0.39	0.310	O	|	|	|	|	1.41
27.500	0.00	0.39	0.308	O	|	|	|	|	1.40
27.583	0.00	0.39	0.305	O	|	|	|	|	1.39
27.667	0.00	0.39	0.302	O	|	|	|	|	1.38
27.750	0.00	0.39	0.300	O	|	|	|	|	1.37
27.833	0.00	0.39	0.297	O	|	|	|	|	1.36
27.917	0.00	0.39	0.294	O	|	|	|	|	1.35
28.000	0.00	0.39	0.291	O	|	|	|	|	1.33
28.083	0.00	0.39	0.289	O	|	|	|	|	1.32
28.167	0.00	0.39	0.286	O	|	|	|	|	1.31
28.250	0.00	0.39	0.283	O	|	|	|	|	1.30
28.333	0.00	0.39	0.281	O	|	|	|	|	1.29
28.417	0.00	0.39	0.278	O	|	|	|	|	1.28
28.500	0.00	0.39	0.275	O	|	|	|	|	1.27
28.583	0.00	0.39	0.272	O	|	|	|	|	1.26
28.667	0.00	0.39	0.270	O	|	|	|	|	1.25
28.750	0.00	0.39	0.267	O	|	|	|	|	1.24
28.833	0.00	0.39	0.264	O	|	|	|	|	1.23
28.917	0.00	0.39	0.262	O	|	|	|	|	1.22
29.000	0.00	0.39	0.259	O	|	|	|	|	1.20
29.083	0.00	0.39	0.256	O	|	|	|	|	1.19
29.167	0.00	0.39	0.253	O	|	|	|	|	1.18
29.250	0.00	0.39	0.251	O	|	|	|	|	1.17
29.333	0.00	0.39	0.248	O	|	|	|	|	1.16
29.417	0.00	0.39	0.245	O	|	|	|	|	1.15
29.500	0.00	0.39	0.243	O	|	|	|	|	1.14
29.583	0.00	0.39	0.240	O	|	|	|	|	1.13
29.667	0.00	0.39	0.237	O	|	|	|	|	1.12
29.750	0.00	0.39	0.235	O	|	|	|	|	1.11
29.833	0.00	0.39	0.232	O	|	|	|	|	1.10
29.917	0.00	0.39	0.229	O	|	|	|	|	1.08
30.000	0.00	0.39	0.226	O	|	|	|	|	1.07
30.083	0.00	0.39	0.224	O	|	|	|	|	1.06
30.167	0.00	0.39	0.221	O	|	|	|	|	1.05
30.250	0.00	0.39	0.218	O	|	|	|	|	1.04
30.333	0.00	0.39	0.216	O	|	|	|	|	1.03
30.417	0.00	0.39	0.213	O	|	|	|	|	1.02
30.500	0.00	0.39	0.210	O	|	|	|	|	1.01
30.583	0.00	0.39	0.207	O	|	|	|	|	1.00
30.667	0.00	0.39	0.205	O	|	|	|	|	0.98
30.750	0.00	0.38	0.202	O	|	|	|	|	0.97
30.833	0.00	0.38	0.200	O	|	|	|	|	0.96
30.917	0.00	0.37	0.197	O	|	|	|	|	0.95
31.000	0.00	0.37	0.194	O	|	|	|	|	0.93
31.083	0.00	0.36	0.192	O	|	|	|	|	0.92

31.167	0.00	0.36	0.189	O	|	|	|	|	0.91
31.250	0.00	0.35	0.187	O	|	|	|	|	0.90
31.333	0.00	0.35	0.185	O	|	|	|	|	0.89
31.417	0.00	0.34	0.182	O	|	|	|	|	0.88
31.500	0.00	0.34	0.180	O	|	|	|	|	0.86
31.583	0.00	0.34	0.177	O	|	|	|	|	0.85
31.667	0.00	0.33	0.175	O	|	|	|	|	0.84
31.750	0.00	0.33	0.173	O	|	|	|	|	0.83
31.833	0.00	0.32	0.171	O	|	|	|	|	0.82
31.917	0.00	0.32	0.168	O	|	|	|	|	0.81
32.000	0.00	0.31	0.166	O	|	|	|	|	0.80
32.083	0.00	0.31	0.164	O	|	|	|	|	0.79
32.167	0.00	0.31	0.162	O	|	|	|	|	0.78
32.250	0.00	0.30	0.160	O	|	|	|	|	0.77
32.333	0.00	0.30	0.158	O	|	|	|	|	0.76
32.417	0.00	0.29	0.156	O	|	|	|	|	0.75
32.500	0.00	0.29	0.154	O	|	|	|	|	0.74
32.583	0.00	0.29	0.152	O	|	|	|	|	0.73
32.667	0.00	0.28	0.150	O	|	|	|	|	0.72
32.750	0.00	0.28	0.148	O	|	|	|	|	0.71
32.833	0.00	0.28	0.146	O	|	|	|	|	0.70
32.917	0.00	0.27	0.144	O	|	|	|	|	0.69
33.000	0.00	0.27	0.142	O	|	|	|	|	0.68
33.083	0.00	0.27	0.140	O	|	|	|	|	0.68
33.167	0.00	0.26	0.139	O	|	|	|	|	0.67
33.250	0.00	0.26	0.137	O	|	|	|	|	0.66
33.333	0.00	0.26	0.135	O	|	|	|	|	0.65
33.417	0.00	0.25	0.133	O	|	|	|	|	0.64
33.500	0.00	0.25	0.132	O	|	|	|	|	0.63
33.583	0.00	0.25	0.130	O	|	|	|	|	0.62
33.667	0.00	0.24	0.128	O	|	|	|	|	0.62
33.750	0.00	0.24	0.127	O	|	|	|	|	0.61
33.833	0.00	0.24	0.125	O	|	|	|	|	0.60
33.917	0.00	0.23	0.123	O	|	|	|	|	0.59
34.000	0.00	0.23	0.122	O	|	|	|	|	0.59
34.083	0.00	0.23	0.120	O	|	|	|	|	0.58
34.167	0.00	0.22	0.119	O	|	|	|	|	0.57
34.250	0.00	0.22	0.117	O	|	|	|	|	0.56
34.333	0.00	0.22	0.116	O	|	|	|	|	0.56
34.417	0.00	0.22	0.114	O	|	|	|	|	0.55
34.500	0.00	0.21	0.113	O	|	|	|	|	0.54
34.583	0.00	0.21	0.111	O	|	|	|	|	0.53
34.667	0.00	0.21	0.110	O	|	|	|	|	0.53
34.750	0.00	0.20	0.108	O	|	|	|	|	0.52
34.833	0.00	0.20	0.107	O	|	|	|	|	0.51
34.917	0.00	0.20	0.105	O	|	|	|	|	0.51
35.000	0.00	0.20	0.104	O	|	|	|	|	0.50
35.083	0.00	0.19	0.103	O	|	|	|	|	0.49
35.167	0.00	0.19	0.101	O	|	|	|	|	0.49
35.250	0.00	0.19	0.100	O	|	|	|	|	0.48
35.333	0.00	0.19	0.099	O	|	|	|	|	0.48
35.417	0.00	0.18	0.098	O	|	|	|	|	0.47
35.500	0.00	0.18	0.096	O	|	|	|	|	0.46
35.583	0.00	0.18	0.095	O	|	|	|	|	0.46
35.667	0.00	0.18	0.094	O	|	|	|	|	0.45
35.750	0.00	0.17	0.093	O	|	|	|	|	0.45
35.833	0.00	0.17	0.091	O	|	|	|	|	0.44
35.917	0.00	0.17	0.090	O	|	|	|	|	0.43
36.000	0.00	0.17	0.089	O	|	|	|	|	0.43
36.083	0.00	0.17	0.088	O	|	|	|	|	0.42
36.167	0.00	0.16	0.087	O	|	|	|	|	0.42
36.250	0.00	0.16	0.086	O	|	|	|	|	0.41
36.333	0.00	0.16	0.085	O	|	|	|	|	0.41

36.417	0.00	0.16	0.083	O	|	|	|	|	0.40
36.500	0.00	0.16	0.082	O	|	|	|	|	0.40
36.583	0.00	0.15	0.081	O	|	|	|	|	0.39
36.667	0.00	0.15	0.080	O	|	|	|	|	0.39
36.750	0.00	0.15	0.079	O	|	|	|	|	0.38
36.833	0.00	0.15	0.078	O	|	|	|	|	0.38
36.917	0.00	0.15	0.077	O	|	|	|	|	0.37
37.000	0.00	0.14	0.076	O	|	|	|	|	0.37
37.083	0.00	0.14	0.075	O	|	|	|	|	0.36
37.167	0.00	0.14	0.074	O	|	|	|	|	0.36
37.250	0.00	0.14	0.073	O	|	|	|	|	0.35
37.333	0.00	0.14	0.072	O	|	|	|	|	0.35
37.417	0.00	0.13	0.071	O	|	|	|	|	0.34
37.500	0.00	0.13	0.070	O	|	|	|	|	0.34
37.583	0.00	0.13	0.070	O	|	|	|	|	0.33
37.667	0.00	0.13	0.069	O	|	|	|	|	0.33
37.750	0.00	0.13	0.068	O	|	|	|	|	0.33
37.833	0.00	0.13	0.067	O	|	|	|	|	0.32
37.917	0.00	0.12	0.066	O	|	|	|	|	0.32
38.000	0.00	0.12	0.065	O	|	|	|	|	0.31
38.083	0.00	0.12	0.064	O	|	|	|	|	0.31
38.167	0.00	0.12	0.063	O	|	|	|	|	0.31
38.250	0.00	0.12	0.063	O	|	|	|	|	0.30
38.333	0.00	0.12	0.062	O	|	|	|	|	0.30
38.417	0.00	0.12	0.061	O	|	|	|	|	0.29
38.500	0.00	0.11	0.060	O	|	|	|	|	0.29
38.583	0.00	0.11	0.059	O	|	|	|	|	0.29
38.667	0.00	0.11	0.059	O	|	|	|	|	0.28
38.750	0.00	0.11	0.058	O	|	|	|	|	0.28
38.833	0.00	0.11	0.057	O	|	|	|	|	0.27
38.917	0.00	0.11	0.056	O	|	|	|	|	0.27
39.000	0.00	0.11	0.056	O	|	|	|	|	0.27
39.083	0.00	0.10	0.055	O	|	|	|	|	0.26
39.167	0.00	0.10	0.054	O	|	|	|	|	0.26
39.250	0.00	0.10	0.054	O	|	|	|	|	0.26
39.333	0.00	0.10	0.053	O	|	|	|	|	0.25

Remaining water in basin = 0.05 (Ac.Ft)

```
****************************HYDROGRAPH DATA****************************
             Number of intervals =   472
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       16.638 (CFS)
             Total volume =       1.680 (Ac.Ft)
      Status of hydrographs being held in storage
                 Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*************************************************************************

---------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       38.100 to Point/Station        8.100
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =    689.30 (Ft.)
Elevation difference =    3.45 (Ft.)
Slope of channel =  0.005005 (Vert/Horiz)
```

```
Channel type - Pipe


Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     2.227(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.227(CFS)
Normal flow depth in pipe =    8.77(In.)
Flow top width inside pipe =   10.65(In.)
Critical Depth =    0.64(Ft.)
Pipe flow velocity =      3.62(Ft/s)
Travel time through pipe =    3.17 min.


Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =    16.638(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    16.638(CFS)
Normal flow depth in pipe =   20.63(In.)
Flow top width inside pipe =   16.69(In.)
Critical Depth =    1.47(Ft.)
Pipe flow velocity =      5.79(Ft/s)
Travel time through pipe =    1.99 min.


*********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7729   Travel time =   1.99 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   2.5056
       dt(routing time-step) =   1.53 (min.),   c* =   0.9756

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T   O F   S T O R M
                R u n o f f      H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        4.2       8.3      12.5      16.6
----------------------------------------------------------------------
  0+ 5       0.0037      0.01  O         |         |         |         |
  0+10       0.0174      0.02  O         |         |         |         |
  0+15       0.0400      0.05  O         |         |         |         |
  0+20       0.0659      0.07  O         |         |         |         |
  0+25       0.0958      0.11  O         |         |         |         |
  0+30       0.1314      0.14  O         |         |         |         |
  0+35       0.1714      0.19  O         |         |         |         |
  0+40       0.2129      0.23  O         |         |         |         |
  0+45       0.2559      0.27  O         |         |         |         |
  0+50       0.2999      0.31  O         |         |         |         |
  0+55       0.3412      0.35  O         |         |         |         |
  1+ 0       0.3802      0.39  O         |         |         |         |
  1+ 5       0.3928      0.39  O         |         |         |         |
```

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1+10       0.3931      0.39  O         |         |         |         |
1+15       0.3931      0.39  O         |         |         |         |
1+20       0.3931      0.39  O         |         |         |         |
1+25       0.3931      0.39  O         |         |         |         |
1+30       0.3931      0.39  O         |         |         |         |
1+35       0.3931      0.39  O         |         |         |         |
1+40       0.3931      0.39  O         |         |         |         |
1+45       0.3931      0.39  O         |         |         |         |
1+50       0.3931      0.39  O         |         |         |         |
1+55       0.3931      0.39  O         |         |         |         |
2+ 0       0.3931      0.39  O         |         |         |         |
2+ 5       0.3931      0.39  O         |         |         |         |
2+10       0.3931      0.39  O         |         |         |         |
2+15       0.3931      0.39  O         |         |         |         |
2+20       0.3931      0.39  O         |         |         |         |
2+25       0.3931      0.39  O         |         |         |         |
2+30       1.5061      2.04  |  OI     |         |         |         |
2+35       8.3105     11.33  |         |        O|      I  |         |
2+40      14.6138     16.29  |         |         |         |    O   I|
2+45      16.4855     16.64  |         |         |         |        OI
2+50      14.3668     13.28  |         |         |         |I  O     |
2+55      10.7739      9.53  |         |         | I  O    |         |
3+ 0       7.6563      6.71  |         |     I O |         |         |
3+ 5       5.0746      4.26  |         I O       |         |         |
3+10       2.9937      2.36  |    I O  |         |         |         |
3+15       1.6217      1.25  | IO      |         |         |         |
3+20       0.8439      0.64  |IO       |         |         |         |
3+25       0.4774      0.39  IO        |         |         |         |
3+30       0.3951      0.39  O         |         |         |         |
3+35       0.3931      0.39  O         |         |         |         |
3+40       0.3931      0.39  O         |         |         |         |
3+45       0.3931      0.39  O         |         |         |         |
3+50       0.3931      0.39  O         |         |         |         |
3+55       0.3931      0.39  O         |         |         |         |
4+ 0       0.3931      0.39  O         |         |         |         |
4+ 5       0.3931      0.39  O         |         |         |         |
4+10       0.3931      0.39  O         |         |         |         |
4+15       0.3931      0.39  O         |         |         |         |
4+20       0.3931      0.39  O         |         |         |         |
4+25       0.3931      0.39  O         |         |         |         |
4+30       0.3931      0.39  O         |         |         |         |
4+35       0.3931      0.39  O         |         |         |         |
4+40       0.3931      0.39  O         |         |         |         |
4+45       0.3931      0.39  O         |         |         |         |
4+50       0.3931      0.39  O         |         |         |         |
4+55       0.3931      0.39  O         |         |         |         |
5+ 0       0.3931      0.39  O         |         |         |         |
5+ 5       0.3931      0.39  O         |         |         |         |
5+10       0.3931      0.39  O         |         |         |         |
5+15       0.3931      0.39  O         |         |         |         |
5+20       0.3931      0.39  O         |         |         |         |
5+25       0.3931      0.39  O         |         |         |         |
5+30       0.3931      0.39  O         |         |         |         |
5+35       0.3931      0.39  O         |         |         |         |
5+40       0.3931      0.39  O         |         |         |         |
5+45       0.3931      0.39  O         |         |         |         |
5+50       0.3931      0.39  O         |         |         |         |
5+55       0.3931      0.39  O         |         |         |         |
6+ 0       0.3931      0.39  O         |         |         |         |
6+ 5       0.3931      0.39  O         |         |         |         |
6+10       0.3931      0.39  O         |         |         |         |
6+15       0.3931      0.39  O         |         |         |         |
6+20       0.3931      0.39  O         |         |         |         |
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6+25	0.3931	0.39	O				
6+30	0.3931	0.39	O				
6+35	0.3931	0.39	O				
6+40	0.3931	0.39	O				
6+45	0.3931	0.39	O				
6+50	0.3931	0.39	O				
6+55	0.3931	0.39	O				
7+ 0	0.3931	0.39	O				
7+ 5	0.3931	0.39	O				
7+10	0.3931	0.39	O				
7+15	0.3931	0.39	O				
7+20	0.3931	0.39	O				
7+25	0.3931	0.39	O				
7+30	0.3931	0.39	O				
7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				
8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3931	0.39	O				
8+35	0.3931	0.39	O				
8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3931	0.39	O				
10+50	0.3931	0.39	O				
10+55	0.3931	0.39	O				
11+ 0	0.3931	0.39	O				
11+ 5	0.3931	0.39	O				
11+10	0.3931	0.39	O				
11+15	0.3931	0.39	O				
11+20	0.3931	0.39	O				
11+25	0.3931	0.39	O				
11+30	0.3931	0.39	O				
11+35	0.3931	0.39	O				

11+40	0.3931	0.39	O				
11+45	0.3931	0.39	O				
11+50	0.3931	0.39	O				
11+55	0.3931	0.39	O				
12+ 0	0.3931	0.39	O				
12+ 5	0.3931	0.39	O				
12+10	0.3931	0.39	O				
12+15	0.3931	0.39	O				
12+20	0.3931	0.39	O				
12+25	0.3931	0.39	O				
12+30	0.3931	0.39	O				
12+35	0.3931	0.39	O				
12+40	0.3931	0.39	O				
12+45	0.3931	0.39	O				
12+50	0.3931	0.39	O				
12+55	0.3931	0.39	O				
13+ 0	0.3931	0.39	O				
13+ 5	0.3931	0.39	O				
13+10	0.3931	0.39	O				
13+15	0.3931	0.39	O				
13+20	0.3931	0.39	O				
13+25	0.3931	0.39	O				
13+30	0.3931	0.39	O				
13+35	0.3931	0.39	O				
13+40	0.3931	0.39	O				
13+45	0.3931	0.39	O				
13+50	0.3931	0.39	O				
13+55	0.3931	0.39	O				
14+ 0	0.3931	0.39	O				
14+ 5	0.3931	0.39	O				
14+10	0.3931	0.39	O				
14+15	0.3931	0.39	O				
14+20	0.3931	0.39	O				
14+25	0.3931	0.39	O				
14+30	0.3931	0.39	O				
14+35	0.3931	0.39	O				
14+40	0.3931	0.39	O				
14+45	0.3931	0.39	O				
14+50	0.3931	0.39	O				
14+55	0.3931	0.39	O				
15+ 0	0.3931	0.39	O				
15+ 5	0.3931	0.39	O				
15+10	0.3931	0.39	O				
15+15	0.3931	0.39	O				
15+20	0.3931	0.39	O				
15+25	0.3931	0.39	O				
15+30	0.3931	0.39	O				
15+35	0.3931	0.39	O				
15+40	0.3931	0.39	O				
15+45	0.3931	0.39	O				
15+50	0.3931	0.39	O				
15+55	0.3931	0.39	O				
16+ 0	0.3931	0.39	O				
16+ 5	0.3931	0.39	O				
16+10	0.3931	0.39	O				
16+15	0.3931	0.39	O				
16+20	0.3931	0.39	O				
16+25	0.3931	0.39	O				
16+30	0.3931	0.39	O				
16+35	0.3931	0.39	O				
16+40	0.3931	0.39	O				
16+45	0.3931	0.39	O				
16+50	0.3931	0.39	O				

16+55	0.3931	0.39	O				
17+ 0	0.3931	0.39	O				
17+ 5	0.3931	0.39	O				
17+10	0.3931	0.39	O				
17+15	0.3931	0.39	O				
17+20	0.3931	0.39	O				
17+25	0.3931	0.39	O				
17+30	0.3931	0.39	O				
17+35	0.3931	0.39	O				
17+40	0.3931	0.39	O				
17+45	0.3931	0.39	O				
17+50	0.3931	0.39	O				
17+55	0.3931	0.39	O				
18+ 0	0.3931	0.39	O				
18+ 5	0.3931	0.39	O				
18+10	0.3931	0.39	O				
18+15	0.3931	0.39	O				
18+20	0.3931	0.39	O				
18+25	0.3931	0.39	O				
18+30	0.3931	0.39	O				
18+35	0.3931	0.39	O				
18+40	0.3931	0.39	O				
18+45	0.3931	0.39	O				
18+50	0.3931	0.39	O				
18+55	0.3931	0.39	O				
19+ 0	0.3931	0.39	O				
19+ 5	0.3931	0.39	O				
19+10	0.3931	0.39	O				
19+15	0.3931	0.39	O				
19+20	0.3931	0.39	O				
19+25	0.3931	0.39	O				
19+30	0.3931	0.39	O				
19+35	0.3931	0.39	O				
19+40	0.3931	0.39	O				
19+45	0.3931	0.39	O				
19+50	0.3931	0.39	O				
19+55	0.3931	0.39	O				
20+ 0	0.3931	0.39	O				
20+ 5	0.3931	0.39	O				
20+10	0.3931	0.39	O				
20+15	0.3931	0.39	O				
20+20	0.3931	0.39	O				
20+25	0.3931	0.39	O				
20+30	0.3931	0.39	O				
20+35	0.3931	0.39	O				
20+40	0.3931	0.39	O				
20+45	0.3931	0.39	O				
20+50	0.3931	0.39	O				
20+55	0.3931	0.39	O				
21+ 0	0.3931	0.39	O				
21+ 5	0.3931	0.39	O				
21+10	0.3931	0.39	O				
21+15	0.3931	0.39	O				
21+20	0.3931	0.39	O				
21+25	0.3931	0.39	O				
21+30	0.3931	0.39	O				
21+35	0.3931	0.39	O				
21+40	0.3931	0.39	O				
21+45	0.3931	0.39	O				
21+50	0.3931	0.39	O				
21+55	0.3931	0.39	O				
22+ 0	0.3931	0.39	O				
22+ 5	0.3931	0.39	O				

22+10	0.3931	0.39	O				
22+15	0.3931	0.39	O				
22+20	0.3931	0.39	O				
22+25	0.3931	0.39	O				
22+30	0.3931	0.39	O				
22+35	0.3931	0.39	O				
22+40	0.3931	0.39	O				
22+45	0.3931	0.39	O				
22+50	0.3931	0.39	O				
22+55	0.3931	0.39	O				
23+ 0	0.3931	0.39	O				
23+ 5	0.3931	0.39	O				
23+10	0.3931	0.39	O				
23+15	0.3931	0.39	O				
23+20	0.3931	0.39	O				
23+25	0.3931	0.39	O				
23+30	0.3931	0.39	O				
23+35	0.3931	0.39	O				
23+40	0.3931	0.39	O				
23+45	0.3931	0.39	O				
23+50	0.3931	0.39	O				
23+55	0.3931	0.39	O				
24+ 0	0.3931	0.39	O				
24+ 5	0.3931	0.39	O				
24+10	0.3931	0.39	O				
24+15	0.3931	0.39	O				
24+20	0.3931	0.39	O				
24+25	0.3931	0.39	O				
24+30	0.3931	0.39	O				
24+35	0.3931	0.39	O				
24+40	0.3931	0.39	O				
24+45	0.3931	0.39	O				
24+50	0.3931	0.39	O				
24+55	0.3931	0.39	O				
25+ 0	0.3931	0.39	O				
25+ 5	0.3931	0.39	O				
25+10	0.3931	0.39	O				
25+15	0.3931	0.39	O				
25+20	0.3931	0.39	O				
25+25	0.3931	0.39	O				
25+30	0.3931	0.39	O				
25+35	0.3931	0.39	O				
25+40	0.3931	0.39	O				
25+45	0.3931	0.39	O				
25+50	0.3931	0.39	O				
25+55	0.3931	0.39	O				
26+ 0	0.3931	0.39	O				
26+ 5	0.3931	0.39	O				
26+10	0.3931	0.39	O				
26+15	0.3931	0.39	O				
26+20	0.3931	0.39	O				
26+25	0.3931	0.39	O				
26+30	0.3931	0.39	O				
26+35	0.3931	0.39	O				
26+40	0.3931	0.39	O				
26+45	0.3931	0.39	O				
26+50	0.3931	0.39	O				
26+55	0.3931	0.39	O				
27+ 0	0.3931	0.39	O				
27+ 5	0.3931	0.39	O				
27+10	0.3931	0.39	O				
27+15	0.3931	0.39	O				
27+20	0.3931	0.39	O				

27+25	0.3931	0.39	O				
27+30	0.3931	0.39	O				
27+35	0.3931	0.39	O				
27+40	0.3931	0.39	O				
27+45	0.3931	0.39	O				
27+50	0.3931	0.39	O				
27+55	0.3931	0.39	O				
28+ 0	0.3931	0.39	O				
28+ 5	0.3931	0.39	O				
28+10	0.3931	0.39	O				
28+15	0.3931	0.39	O				
28+20	0.3931	0.39	O				
28+25	0.3931	0.39	O				
28+30	0.3931	0.39	O				
28+35	0.3931	0.39	O				
28+40	0.3931	0.39	O				
28+45	0.3931	0.39	O				
28+50	0.3931	0.39	O				
28+55	0.3931	0.39	O				
29+ 0	0.3931	0.39	O				
29+ 5	0.3931	0.39	O				
29+10	0.3931	0.39	O				
29+15	0.3931	0.39	O				
29+20	0.3931	0.39	O				
29+25	0.3931	0.39	O				
29+30	0.3931	0.39	O				
29+35	0.3931	0.39	O				
29+40	0.3931	0.39	O				
29+45	0.3931	0.39	O				
29+50	0.3931	0.39	O				
29+55	0.3931	0.39	O				
30+ 0	0.3931	0.39	O				
30+ 5	0.3931	0.39	O				
30+10	0.3931	0.39	O				
30+15	0.3931	0.39	O				
30+20	0.3931	0.39	O				
30+25	0.3931	0.39	O				
30+30	0.3931	0.39	O				
30+35	0.3924	0.39	O				
30+40	0.3887	0.39	O				
30+45	0.3837	0.38	O				
30+50	0.3787	0.38	O				
30+55	0.3738	0.37	O				
31+ 0	0.3690	0.37	O				
31+ 5	0.3642	0.36	O				
31+10	0.3595	0.36	O				
31+15	0.3548	0.35	O				
31+20	0.3503	0.35	O				
31+25	0.3457	0.34	O				
31+30	0.3413	0.34	O				
31+35	0.3368	0.34	O				
31+40	0.3325	0.33	O				
31+45	0.3282	0.33	O				
31+50	0.3239	0.32	O				
31+55	0.3198	0.32	O				
32+ 0	0.3156	0.31	O				
32+ 5	0.3115	0.31	O				
32+10	0.3075	0.31	O				
32+15	0.3035	0.30	O				
32+20	0.2996	0.30	O				
32+25	0.2957	0.29	O				
32+30	0.2919	0.29	O				
32+35	0.2881	0.29	O				

32+40	0.2844	0.28	O				
32+45	0.2807	0.28	O				
32+50	0.2771	0.28	O				
32+55	0.2735	0.27	O				
33+ 0	0.2700	0.27	O				
33+ 5	0.2665	0.27	O				
33+10	0.2630	0.26	O				
33+15	0.2596	0.26	O				
33+20	0.2563	0.26	O				
33+25	0.2530	0.25	O				
33+30	0.2497	0.25	O				
33+35	0.2465	0.25	O				
33+40	0.2433	0.24	O				
33+45	0.2401	0.24	O				
33+50	0.2370	0.24	O				
33+55	0.2340	0.23	O				
34+ 0	0.2309	0.23	O				
34+ 5	0.2280	0.23	O				
34+10	0.2250	0.22	O				
34+15	0.2221	0.22	O				
34+20	0.2192	0.22	O				
34+25	0.2164	0.22	O				
34+30	0.2136	0.21	O				
34+35	0.2108	0.21	O				
34+40	0.2081	0.21	O				
34+45	0.2054	0.20	O				
34+50	0.2028	0.20	O				
34+55	0.2001	0.20	O				
35+ 0	0.1976	0.20	O				
35+ 5	0.1950	0.19	O				
35+10	0.1925	0.19	O				
35+15	0.1900	0.19	O				
35+20	0.1875	0.19	O				
35+25	0.1851	0.18	O				
35+30	0.1827	0.18	O				
35+35	0.1803	0.18	O				
35+40	0.1780	0.18	O				
35+45	0.1757	0.17	O				
35+50	0.1734	0.17	O				
35+55	0.1712	0.17	O				
36+ 0	0.1690	0.17	O				
36+ 5	0.1668	0.17	O				
36+10	0.1646	0.16	O				
36+15	0.1625	0.16	O				
36+20	0.1604	0.16	O				
36+25	0.1583	0.16	O				
36+30	0.1563	0.16	O				
36+35	0.1543	0.15	O				
36+40	0.1523	0.15	O				
36+45	0.1503	0.15	O				
36+50	0.1484	0.15	O				
36+55	0.1464	0.15	O				
37+ 0	0.1446	0.14	O				
37+ 5	0.1427	0.14	O				
37+10	0.1408	0.14	O				
37+15	0.1390	0.14	O				
37+20	0.1372	0.14	O				
37+25	0.1354	0.13	O				
37+30	0.1337	0.13	O				
37+35	0.1320	0.13	O				
37+40	0.1303	0.13	O				
37+45	0.1286	0.13	O				
37+50	0.1269	0.13	O				

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   37+55       0.1253      0.12  O         |         |         |         |
   38+ 0       0.1237      0.12  O         |         |         |         |
   38+ 5       0.1221      0.12  O         |         |         |         |
   38+10       0.1205      0.12  O         |         |         |         |
   38+15       0.1189      0.12  O         |         |         |         |
   38+20       0.1174      0.12  O         |         |         |         |
   38+25       0.1159      0.12  O         |         |         |         |
   38+30       0.1144      0.11  O         |         |         |         |
   38+35       0.1129      0.11  O         |         |         |         |
   38+40       0.1114      0.11  O         |         |         |         |
   38+45       0.1100      0.11  O         |         |         |         |
   38+50       0.1086      0.11  O         |         |         |         |
   38+55       0.1072      0.11  O         |         |         |         |
   39+ 0       0.1058      0.11  O         |         |         |         |
   39+ 5       0.1044      0.10  O         |         |         |         |
   39+10       0.1031      0.10  O         |         |         |         |
   39+15       0.1017      0.10  O         |         |         |         |
   39+20       0.1004      0.10  O         |         |         |         |
   39+25       0.0324      0.00  O         |         |         |         |
   39+30       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   474
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =       16.485 (CFS)
                   Total volume =       1.680 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station       38.100 to Point/Station        8.100
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ____________________________________________________________________
      Current stream hydrograph saved in file 27259PONDA103.rte
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =     0
                   Time interval =    0.0 (Min.)
                   Maximum/Peak flow rate =        0.000 (CFS)
                   Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA A (Pond A)- Q10yr6hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION *********************

             From study/file name: 27259UHA610.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    77
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       20.913 (CFS)
             Total volume =       2.363 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       40.000 to Point/Station       38.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    2.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.00(Ft.) Capacity = 0.39(CFS)

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 4.00(Ft.) Capacity = 0.39(CFS)

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.00(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 3.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.50(Ft.) Capacity = 39.99(CFS)

Total outflow at this depth = 40.38(CFS)

Total number of inflow hydrograph intervals = 77
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.208	0.393	0.207	0.209
2.000	0.457	0.393	0.456	0.458
3.000	0.751	0.393	0.750	0.752
4.000	1.091	0.393	1.090	1.092
5.000	1.480	40.379	1.341	1.619

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 5.2 10.46 15.68 20.91	Depth (Ft.)
0.083	0.22	0.00	0.001	O	0.00
0.167	0.67	0.01	0.004	OI	0.02
0.250	0.95	0.02	0.009	OI	0.04
0.333	1.03	0.03	0.016	OI	0.08
0.417	1.06	0.04	0.023	OI	0.11
0.500	1.24	0.06	0.030	OI	0.15
0.583	1.46	0.07	0.039	O I	0.19
0.667	1.51	0.09	0.049	O I	0.24
0.750	1.53	0.11	0.059	O I	0.28
0.833	1.54	0.13	0.068	O I	0.33
0.917	1.54	0.15	0.078	O I	0.38
1.000	1.71	0.17	0.088	O I	0.42
1.083	1.92	0.19	0.100	O I	0.48
1.167	1.97	0.21	0.112	O I	0.54
1.250	1.99	0.23	0.124	O I	0.59
1.333	2.00	0.26	0.136	O I	0.65
1.417	2.01	0.28	0.148	O I	0.71
1.500	2.01	0.30	0.160	O I	0.77
1.583	2.01	0.32	0.171	O I	0.82
1.667	2.01	0.35	0.183	O I	0.88
1.750	2.01	0.37	0.194	O I	0.93
1.833	2.01	0.39	0.205	O I	0.99
1.917	2.01	0.39	0.216	O I	1.03
2.000	2.17	0.39	0.228	O I	1.08
2.083	2.22	0.39	0.241	O I	1.13
2.167	2.22	0.39	0.253	O I	1.18
2.250	2.41	0.39	0.266	O I	1.23
2.333	2.44	0.39	0.280	O I	1.29
2.417	2.46	0.39	0.294	O I	1.35
2.500	2.47	0.39	0.309	O I	1.40
2.583	2.47	0.39	0.323	O I	1.46
2.667	2.47	0.39	0.337	O I	1.52
2.750	2.63	0.39	0.352	O I	1.58
2.833	2.85	0.39	0.368	O I	1.64
2.917	2.90	0.39	0.385	O I	1.71
3.000	2.92	0.39	0.403	O I	1.78
3.083	2.93	0.39	0.420	O I	1.85
3.167	3.09	0.39	0.438	O I	1.92
3.250	3.31	0.39	0.458	O I	2.00
3.333	3.36	0.39	0.478	O I	2.07
3.417	3.54	0.39	0.499	O I	2.14
3.500	3.93	0.39	0.522	O I	2.22
3.583	4.36	0.39	0.548	O I	2.31
3.667	4.65	0.39	0.576	O I	2.40
3.750	4.89	0.39	0.606	O I	2.51
3.833	5.14	0.39	0.638	O I	2.62
3.917	5.37	0.39	0.671	O I	2.73
4.000	5.61	0.39	0.707	O I	2.85
4.083	5.83	0.39	0.743	O I	2.97
4.167	6.23	0.39	0.782	O I	3.09
4.250	6.67	0.39	0.824	O I	3.21
4.333	7.12	0.39	0.869	O I	3.35
4.417	7.58	0.39	0.916	O I	3.49
4.500	7.88	0.39	0.967	O I	3.64
4.583	8.13	0.39	1.019	O I	3.79
4.667	8.54	0.39	1.074	O I	3.95
4.750	8.98	3.48	1.121	O I	4.08
4.833	9.27	6.43	1.150	O I	4.15

4.917	9.51	7.98	1.165	|	|	O I |	|	|	4.19
5.000	9.93	8.89	1.174	|	|	O I|	|	|	4.21
5.083	11.02	9.72	1.182	|	|	O I	|	|	4.23
5.167	12.98	10.91	1.193	|	|	O I	|	|	4.26
5.250	14.82	12.48	1.209	|	|	O I |	|	|	4.30
5.333	16.32	14.09	1.224	|	|	O I	|	|	4.34
5.417	18.09	15.72	1.240	|	|	O I	|	|	4.38
5.500	20.91	17.70	1.259	|	|	| O	I	|	4.43
5.583	17.17	18.40	1.266	|	|	| I O	|	|	4.45
5.667	8.20	15.41	1.237	|	|	I | O|	|	|	4.38
5.750	4.00	10.54	1.190	|	I |	O	|	|	4.25
5.833	2.02	6.61	1.151	|	I |	O	|	|	4.16
5.917	1.18	3.99	1.126	|I	O |	|	|	|	4.09
6.000	0.83	2.43	1.111	|I O	|	|	|	|	4.05
6.083	0.43	1.49	1.102	I O	|	|	|	|	4.03
6.167	0.12	0.86	1.096	IO	|	|	|	|	4.01
6.250	0.05	0.45	1.092	O	|	|	|	|	4.00
6.333	0.02	0.39	1.089	O	|	|	|	|	3.99
6.417	0.00	0.39	1.086	O	|	|	|	|	3.99
6.500	0.00	0.39	1.084	O	|	|	|	|	3.98
6.583	0.00	0.39	1.081	O	|	|	|	|	3.97
6.667	0.00	0.39	1.078	O	|	|	|	|	3.96
6.750	0.00	0.39	1.075	O	|	|	|	|	3.95
6.833	0.00	0.39	1.073	O	|	|	|	|	3.95
6.917	0.00	0.39	1.070	O	|	|	|	|	3.94
7.000	0.00	0.39	1.067	O	|	|	|	|	3.93
7.083	0.00	0.39	1.065	O	|	|	|	|	3.92
7.167	0.00	0.39	1.062	O	|	|	|	|	3.91
7.250	0.00	0.39	1.059	O	|	|	|	|	3.91
7.333	0.00	0.39	1.057	O	|	|	|	|	3.90
7.417	0.00	0.39	1.054	O	|	|	|	|	3.89
7.500	0.00	0.39	1.051	O	|	|	|	|	3.88
7.583	0.00	0.39	1.048	O	|	|	|	|	3.87
7.667	0.00	0.39	1.046	O	|	|	|	|	3.87
7.750	0.00	0.39	1.043	O	|	|	|	|	3.86
7.833	0.00	0.39	1.040	O	|	|	|	|	3.85
7.917	0.00	0.39	1.038	O	|	|	|	|	3.84
8.000	0.00	0.39	1.035	O	|	|	|	|	3.83
8.083	0.00	0.39	1.032	O	|	|	|	|	3.83
8.167	0.00	0.39	1.029	O	|	|	|	|	3.82
8.250	0.00	0.39	1.027	O	|	|	|	|	3.81
8.333	0.00	0.39	1.024	O	|	|	|	|	3.80
8.417	0.00	0.39	1.021	O	|	|	|	|	3.80
8.500	0.00	0.39	1.019	O	|	|	|	|	3.79
8.583	0.00	0.39	1.016	O	|	|	|	|	3.78
8.667	0.00	0.39	1.013	O	|	|	|	|	3.77
8.750	0.00	0.39	1.011	O	|	|	|	|	3.76
8.833	0.00	0.39	1.008	O	|	|	|	|	3.76
8.917	0.00	0.39	1.005	O	|	|	|	|	3.75
9.000	0.00	0.39	1.002	O	|	|	|	|	3.74
9.083	0.00	0.39	1.000	O	|	|	|	|	3.73
9.167	0.00	0.39	0.997	O	|	|	|	|	3.72
9.250	0.00	0.39	0.994	O	|	|	|	|	3.72
9.333	0.00	0.39	0.992	O	|	|	|	|	3.71
9.417	0.00	0.39	0.989	O	|	|	|	|	3.70
9.500	0.00	0.39	0.986	O	|	|	|	|	3.69
9.583	0.00	0.39	0.983	O	|	|	|	|	3.68
9.667	0.00	0.39	0.981	O	|	|	|	|	3.68
9.750	0.00	0.39	0.978	O	|	|	|	|	3.67
9.833	0.00	0.39	0.975	O	|	|	|	|	3.66
9.917	0.00	0.39	0.973	O	|	|	|	|	3.65
10.000	0.00	0.39	0.970	O	|	|	|	|	3.64
10.083	0.00	0.39	0.967	O	|	|	|	|	3.64

10.167	0.00	0.39	0.965	O	|	|	|	|	3.63
10.250	0.00	0.39	0.962	O	|	|	|	|	3.62
10.333	0.00	0.39	0.959	O	|	|	|	|	3.61
10.417	0.00	0.39	0.956	O	|	|	|	|	3.60
10.500	0.00	0.39	0.954	O	|	|	|	|	3.60
10.583	0.00	0.39	0.951	O	|	|	|	|	3.59
10.667	0.00	0.39	0.948	O	|	|	|	|	3.58
10.750	0.00	0.39	0.946	O	|	|	|	|	3.57
10.833	0.00	0.39	0.943	O	|	|	|	|	3.56
10.917	0.00	0.39	0.940	O	|	|	|	|	3.56
11.000	0.00	0.39	0.937	O	|	|	|	|	3.55
11.083	0.00	0.39	0.935	O	|	|	|	|	3.54
11.167	0.00	0.39	0.932	O	|	|	|	|	3.53
11.250	0.00	0.39	0.929	O	|	|	|	|	3.52
11.333	0.00	0.39	0.927	O	|	|	|	|	3.52
11.417	0.00	0.39	0.924	O	|	|	|	|	3.51
11.500	0.00	0.39	0.921	O	|	|	|	|	3.50
11.583	0.00	0.39	0.918	O	|	|	|	|	3.49
11.667	0.00	0.39	0.916	O	|	|	|	|	3.48
11.750	0.00	0.39	0.913	O	|	|	|	|	3.48
11.833	0.00	0.39	0.910	O	|	|	|	|	3.47
11.917	0.00	0.39	0.908	O	|	|	|	|	3.46
12.000	0.00	0.39	0.905	O	|	|	|	|	3.45
12.083	0.00	0.39	0.902	O	|	|	|	|	3.44
12.167	0.00	0.39	0.900	O	|	|	|	|	3.44
12.250	0.00	0.39	0.897	O	|	|	|	|	3.43
12.333	0.00	0.39	0.894	O	|	|	|	|	3.42
12.417	0.00	0.39	0.891	O	|	|	|	|	3.41
12.500	0.00	0.39	0.889	O	|	|	|	|	3.41
12.583	0.00	0.39	0.886	O	|	|	|	|	3.40
12.667	0.00	0.39	0.883	O	|	|	|	|	3.39
12.750	0.00	0.39	0.881	O	|	|	|	|	3.38
12.833	0.00	0.39	0.878	O	|	|	|	|	3.37
12.917	0.00	0.39	0.875	O	|	|	|	|	3.37
13.000	0.00	0.39	0.872	O	|	|	|	|	3.36
13.083	0.00	0.39	0.870	O	|	|	|	|	3.35
13.167	0.00	0.39	0.867	O	|	|	|	|	3.34
13.250	0.00	0.39	0.864	O	|	|	|	|	3.33
13.333	0.00	0.39	0.862	O	|	|	|	|	3.33
13.417	0.00	0.39	0.859	O	|	|	|	|	3.32
13.500	0.00	0.39	0.856	O	|	|	|	|	3.31
13.583	0.00	0.39	0.854	O	|	|	|	|	3.30
13.667	0.00	0.39	0.851	O	|	|	|	|	3.29
13.750	0.00	0.39	0.848	O	|	|	|	|	3.29
13.833	0.00	0.39	0.845	O	|	|	|	|	3.28
13.917	0.00	0.39	0.843	O	|	|	|	|	3.27
14.000	0.00	0.39	0.840	O	|	|	|	|	3.26
14.083	0.00	0.39	0.837	O	|	|	|	|	3.25
14.167	0.00	0.39	0.835	O	|	|	|	|	3.25
14.250	0.00	0.39	0.832	O	|	|	|	|	3.24
14.333	0.00	0.39	0.829	O	|	|	|	|	3.23
14.417	0.00	0.39	0.826	O	|	|	|	|	3.22
14.500	0.00	0.39	0.824	O	|	|	|	|	3.21
14.583	0.00	0.39	0.821	O	|	|	|	|	3.21
14.667	0.00	0.39	0.818	O	|	|	|	|	3.20
14.750	0.00	0.39	0.816	O	|	|	|	|	3.19
14.833	0.00	0.39	0.813	O	|	|	|	|	3.18
14.917	0.00	0.39	0.810	O	|	|	|	|	3.17
15.000	0.00	0.39	0.807	O	|	|	|	|	3.17
15.083	0.00	0.39	0.805	O	|	|	|	|	3.16
15.167	0.00	0.39	0.802	O	|	|	|	|	3.15
15.250	0.00	0.39	0.799	O	|	|	|	|	3.14
15.333	0.00	0.39	0.797	O	|	|	|	|	3.13

15.417	0.00	0.39	0.794	O	|	|	|	|	3.13
15.500	0.00	0.39	0.791	O	|	|	|	|	3.12
15.583	0.00	0.39	0.789	O	|	|	|	|	3.11
15.667	0.00	0.39	0.786	O	|	|	|	|	3.10
15.750	0.00	0.39	0.783	O	|	|	|	|	3.09
15.833	0.00	0.39	0.780	O	|	|	|	|	3.09
15.917	0.00	0.39	0.778	O	|	|	|	|	3.08
16.000	0.00	0.39	0.775	O	|	|	|	|	3.07
16.083	0.00	0.39	0.772	O	|	|	|	|	3.06
16.167	0.00	0.39	0.770	O	|	|	|	|	3.05
16.250	0.00	0.39	0.767	O	|	|	|	|	3.05
16.333	0.00	0.39	0.764	O	|	|	|	|	3.04
16.417	0.00	0.39	0.761	O	|	|	|	|	3.03
16.500	0.00	0.39	0.759	O	|	|	|	|	3.02
16.583	0.00	0.39	0.756	O	|	|	|	|	3.01
16.667	0.00	0.39	0.753	O	|	|	|	|	3.01
16.750	0.00	0.39	0.751	O	|	|	|	|	3.00
16.833	0.00	0.39	0.748	O	|	|	|	|	2.99
16.917	0.00	0.39	0.745	O	|	|	|	|	2.98
17.000	0.00	0.39	0.743	O	|	|	|	|	2.97
17.083	0.00	0.39	0.740	O	|	|	|	|	2.96
17.167	0.00	0.39	0.737	O	|	|	|	|	2.95
17.250	0.00	0.39	0.734	O	|	|	|	|	2.94
17.333	0.00	0.39	0.732	O	|	|	|	|	2.93
17.417	0.00	0.39	0.729	O	|	|	|	|	2.93
17.500	0.00	0.39	0.726	O	|	|	|	|	2.92
17.583	0.00	0.39	0.724	O	|	|	|	|	2.91
17.667	0.00	0.39	0.721	O	|	|	|	|	2.90
17.750	0.00	0.39	0.718	O	|	|	|	|	2.89
17.833	0.00	0.39	0.715	O	|	|	|	|	2.88
17.917	0.00	0.39	0.713	O	|	|	|	|	2.87
18.000	0.00	0.39	0.710	O	|	|	|	|	2.86
18.083	0.00	0.39	0.707	O	|	|	|	|	2.85
18.167	0.00	0.39	0.705	O	|	|	|	|	2.84
18.250	0.00	0.39	0.702	O	|	|	|	|	2.83
18.333	0.00	0.39	0.699	O	|	|	|	|	2.82
18.417	0.00	0.39	0.697	O	|	|	|	|	2.81
18.500	0.00	0.39	0.694	O	|	|	|	|	2.81
18.583	0.00	0.39	0.691	O	|	|	|	|	2.80
18.667	0.00	0.39	0.688	O	|	|	|	|	2.79
18.750	0.00	0.39	0.686	O	|	|	|	|	2.78
18.833	0.00	0.39	0.683	O	|	|	|	|	2.77
18.917	0.00	0.39	0.680	O	|	|	|	|	2.76
19.000	0.00	0.39	0.678	O	|	|	|	|	2.75
19.083	0.00	0.39	0.675	O	|	|	|	|	2.74
19.167	0.00	0.39	0.672	O	|	|	|	|	2.73
19.250	0.00	0.39	0.669	O	|	|	|	|	2.72
19.333	0.00	0.39	0.667	O	|	|	|	|	2.71
19.417	0.00	0.39	0.664	O	|	|	|	|	2.70
19.500	0.00	0.39	0.661	O	|	|	|	|	2.69
19.583	0.00	0.39	0.659	O	|	|	|	|	2.69
19.667	0.00	0.39	0.656	O	|	|	|	|	2.68
19.750	0.00	0.39	0.653	O	|	|	|	|	2.67
19.833	0.00	0.39	0.650	O	|	|	|	|	2.66
19.917	0.00	0.39	0.648	O	|	|	|	|	2.65
20.000	0.00	0.39	0.645	O	|	|	|	|	2.64
20.083	0.00	0.39	0.642	O	|	|	|	|	2.63
20.167	0.00	0.39	0.640	O	|	|	|	|	2.62
20.250	0.00	0.39	0.637	O	|	|	|	|	2.61
20.333	0.00	0.39	0.634	O	|	|	|	|	2.60
20.417	0.00	0.39	0.632	O	|	|	|	|	2.59
20.500	0.00	0.39	0.629	O	|	|	|	|	2.58
20.583	0.00	0.39	0.626	O	|	|	|	|	2.58

20.667	0.00	0.39	0.623	O	|	|	|	|	2.57
20.750	0.00	0.39	0.621	O	|	|	|	|	2.56
20.833	0.00	0.39	0.618	O	|	|	|	|	2.55
20.917	0.00	0.39	0.615	O	|	|	|	|	2.54
21.000	0.00	0.39	0.613	O	|	|	|	|	2.53
21.083	0.00	0.39	0.610	O	|	|	|	|	2.52
21.167	0.00	0.39	0.607	O	|	|	|	|	2.51
21.250	0.00	0.39	0.604	O	|	|	|	|	2.50
21.333	0.00	0.39	0.602	O	|	|	|	|	2.49
21.417	0.00	0.39	0.599	O	|	|	|	|	2.48
21.500	0.00	0.39	0.596	O	|	|	|	|	2.47
21.583	0.00	0.39	0.594	O	|	|	|	|	2.46
21.667	0.00	0.39	0.591	O	|	|	|	|	2.46
21.750	0.00	0.39	0.588	O	|	|	|	|	2.45
21.833	0.00	0.39	0.586	O	|	|	|	|	2.44
21.917	0.00	0.39	0.583	O	|	|	|	|	2.43
22.000	0.00	0.39	0.580	O	|	|	|	|	2.42
22.083	0.00	0.39	0.577	O	|	|	|	|	2.41
22.167	0.00	0.39	0.575	O	|	|	|	|	2.40
22.250	0.00	0.39	0.572	O	|	|	|	|	2.39
22.333	0.00	0.39	0.569	O	|	|	|	|	2.38
22.417	0.00	0.39	0.567	O	|	|	|	|	2.37
22.500	0.00	0.39	0.564	O	|	|	|	|	2.36
22.583	0.00	0.39	0.561	O	|	|	|	|	2.35
22.667	0.00	0.39	0.558	O	|	|	|	|	2.35
22.750	0.00	0.39	0.556	O	|	|	|	|	2.34
22.833	0.00	0.39	0.553	O	|	|	|	|	2.33
22.917	0.00	0.39	0.550	O	|	|	|	|	2.32
23.000	0.00	0.39	0.548	O	|	|	|	|	2.31
23.083	0.00	0.39	0.545	O	|	|	|	|	2.30
23.167	0.00	0.39	0.542	O	|	|	|	|	2.29
23.250	0.00	0.39	0.539	O	|	|	|	|	2.28
23.333	0.00	0.39	0.537	O	|	|	|	|	2.27
23.417	0.00	0.39	0.534	O	|	|	|	|	2.26
23.500	0.00	0.39	0.531	O	|	|	|	|	2.25
23.583	0.00	0.39	0.529	O	|	|	|	|	2.24
23.667	0.00	0.39	0.526	O	|	|	|	|	2.23
23.750	0.00	0.39	0.523	O	|	|	|	|	2.23
23.833	0.00	0.39	0.521	O	|	|	|	|	2.22
23.917	0.00	0.39	0.518	O	|	|	|	|	2.21
24.000	0.00	0.39	0.515	O	|	|	|	|	2.20
24.083	0.00	0.39	0.512	O	|	|	|	|	2.19
24.167	0.00	0.39	0.510	O	|	|	|	|	2.18
24.250	0.00	0.39	0.507	O	|	|	|	|	2.17
24.333	0.00	0.39	0.504	O	|	|	|	|	2.16
24.417	0.00	0.39	0.502	O	|	|	|	|	2.15
24.500	0.00	0.39	0.499	O	|	|	|	|	2.14
24.583	0.00	0.39	0.496	O	|	|	|	|	2.13
24.667	0.00	0.39	0.493	O	|	|	|	|	2.12
24.750	0.00	0.39	0.491	O	|	|	|	|	2.11
24.833	0.00	0.39	0.488	O	|	|	|	|	2.11
24.917	0.00	0.39	0.485	O	|	|	|	|	2.10
25.000	0.00	0.39	0.483	O	|	|	|	|	2.09
25.083	0.00	0.39	0.480	O	|	|	|	|	2.08
25.167	0.00	0.39	0.477	O	|	|	|	|	2.07
25.250	0.00	0.39	0.475	O	|	|	|	|	2.06
25.333	0.00	0.39	0.472	O	|	|	|	|	2.05
25.417	0.00	0.39	0.469	O	|	|	|	|	2.04
25.500	0.00	0.39	0.466	O	|	|	|	|	2.03
25.583	0.00	0.39	0.464	O	|	|	|	|	2.02
25.667	0.00	0.39	0.461	O	|	|	|	|	2.01
25.750	0.00	0.39	0.458	O	|	|	|	|	2.00
25.833	0.00	0.39	0.456	O	|	|	|	|	1.99

25.917	0.00	0.39	0.453	O	|	|	|	|	1.98
26.000	0.00	0.39	0.450	O	|	|	|	|	1.97
26.083	0.00	0.39	0.447	O	|	|	|	|	1.96
26.167	0.00	0.39	0.445	O	|	|	|	|	1.95
26.250	0.00	0.39	0.442	O	|	|	|	|	1.94
26.333	0.00	0.39	0.439	O	|	|	|	|	1.93
26.417	0.00	0.39	0.437	O	|	|	|	|	1.92
26.500	0.00	0.39	0.434	O	|	|	|	|	1.91
26.583	0.00	0.39	0.431	O	|	|	|	|	1.90
26.667	0.00	0.39	0.429	O	|	|	|	|	1.89
26.750	0.00	0.39	0.426	O	|	|	|	|	1.87
26.833	0.00	0.39	0.423	O	|	|	|	|	1.86
26.917	0.00	0.39	0.420	O	|	|	|	|	1.85
27.000	0.00	0.39	0.418	O	|	|	|	|	1.84
27.083	0.00	0.39	0.415	O	|	|	|	|	1.83
27.167	0.00	0.39	0.412	O	|	|	|	|	1.82
27.250	0.00	0.39	0.410	O	|	|	|	|	1.81
27.333	0.00	0.39	0.407	O	|	|	|	|	1.80
27.417	0.00	0.39	0.404	O	|	|	|	|	1.79
27.500	0.00	0.39	0.401	O	|	|	|	|	1.78
27.583	0.00	0.39	0.399	O	|	|	|	|	1.77
27.667	0.00	0.39	0.396	O	|	|	|	|	1.76
27.750	0.00	0.39	0.393	O	|	|	|	|	1.74
27.833	0.00	0.39	0.391	O	|	|	|	|	1.73
27.917	0.00	0.39	0.388	O	|	|	|	|	1.72
28.000	0.00	0.39	0.385	O	|	|	|	|	1.71
28.083	0.00	0.39	0.382	O	|	|	|	|	1.70
28.167	0.00	0.39	0.380	O	|	|	|	|	1.69
28.250	0.00	0.39	0.377	O	|	|	|	|	1.68
28.333	0.00	0.39	0.374	O	|	|	|	|	1.67
28.417	0.00	0.39	0.372	O	|	|	|	|	1.66
28.500	0.00	0.39	0.369	O	|	|	|	|	1.65
28.583	0.00	0.39	0.366	O	|	|	|	|	1.64
28.667	0.00	0.39	0.364	O	|	|	|	|	1.62
28.750	0.00	0.39	0.361	O	|	|	|	|	1.61
28.833	0.00	0.39	0.358	O	|	|	|	|	1.60
28.917	0.00	0.39	0.355	O	|	|	|	|	1.59
29.000	0.00	0.39	0.353	O	|	|	|	|	1.58
29.083	0.00	0.39	0.350	O	|	|	|	|	1.57
29.167	0.00	0.39	0.347	O	|	|	|	|	1.56
29.250	0.00	0.39	0.345	O	|	|	|	|	1.55
29.333	0.00	0.39	0.342	O	|	|	|	|	1.54
29.417	0.00	0.39	0.339	O	|	|	|	|	1.53
29.500	0.00	0.39	0.336	O	|	|	|	|	1.52
29.583	0.00	0.39	0.334	O	|	|	|	|	1.51
29.667	0.00	0.39	0.331	O	|	|	|	|	1.49
29.750	0.00	0.39	0.328	O	|	|	|	|	1.48
29.833	0.00	0.39	0.326	O	|	|	|	|	1.47
29.917	0.00	0.39	0.323	O	|	|	|	|	1.46
30.000	0.00	0.39	0.320	O	|	|	|	|	1.45
30.083	0.00	0.39	0.318	O	|	|	|	|	1.44
30.167	0.00	0.39	0.315	O	|	|	|	|	1.43
30.250	0.00	0.39	0.312	O	|	|	|	|	1.42
30.333	0.00	0.39	0.309	O	|	|	|	|	1.41
30.417	0.00	0.39	0.307	O	|	|	|	|	1.40
30.500	0.00	0.39	0.304	O	|	|	|	|	1.39
30.583	0.00	0.39	0.301	O	|	|	|	|	1.37
30.667	0.00	0.39	0.299	O	|	|	|	|	1.36
30.750	0.00	0.39	0.296	O	|	|	|	|	1.35
30.833	0.00	0.39	0.293	O	|	|	|	|	1.34
30.917	0.00	0.39	0.290	O	|	|	|	|	1.33
31.000	0.00	0.39	0.288	O	|	|	|	|	1.32
31.083	0.00	0.39	0.285	O	|	|	|	|	1.31

31.167	0.00	0.39	0.282	O	|	|	|	|	1.30
31.250	0.00	0.39	0.280	O	|	|	|	|	1.29
31.333	0.00	0.39	0.277	O	|	|	|	|	1.28
31.417	0.00	0.39	0.274	O	|	|	|	|	1.27
31.500	0.00	0.39	0.271	O	|	|	|	|	1.25
31.583	0.00	0.39	0.269	O	|	|	|	|	1.24
31.667	0.00	0.39	0.266	O	|	|	|	|	1.23
31.750	0.00	0.39	0.263	O	|	|	|	|	1.22
31.833	0.00	0.39	0.261	O	|	|	|	|	1.21
31.917	0.00	0.39	0.258	O	|	|	|	|	1.20
32.000	0.00	0.39	0.255	O	|	|	|	|	1.19
32.083	0.00	0.39	0.253	O	|	|	|	|	1.18
32.167	0.00	0.39	0.250	O	|	|	|	|	1.17
32.250	0.00	0.39	0.247	O	|	|	|	|	1.16
32.333	0.00	0.39	0.244	O	|	|	|	|	1.15
32.417	0.00	0.39	0.242	O	|	|	|	|	1.14
32.500	0.00	0.39	0.239	O	|	|	|	|	1.12
32.583	0.00	0.39	0.236	O	|	|	|	|	1.11
32.667	0.00	0.39	0.234	O	|	|	|	|	1.10
32.750	0.00	0.39	0.231	O	|	|	|	|	1.09
32.833	0.00	0.39	0.228	O	|	|	|	|	1.08
32.917	0.00	0.39	0.225	O	|	|	|	|	1.07
33.000	0.00	0.39	0.223	O	|	|	|	|	1.06
33.083	0.00	0.39	0.220	O	|	|	|	|	1.05
33.167	0.00	0.39	0.217	O	|	|	|	|	1.04
33.250	0.00	0.39	0.215	O	|	|	|	|	1.03
33.333	0.00	0.39	0.212	O	|	|	|	|	1.02
33.417	0.00	0.39	0.209	O	|	|	|	|	1.00
33.500	0.00	0.39	0.207	O	|	|	|	|	0.99
33.583	0.00	0.39	0.204	O	|	|	|	|	0.98
33.667	0.00	0.38	0.201	O	|	|	|	|	0.97
33.750	0.00	0.38	0.199	O	|	|	|	|	0.95
33.833	0.00	0.37	0.196	O	|	|	|	|	0.94
33.917	0.00	0.37	0.194	O	|	|	|	|	0.93
34.000	0.00	0.36	0.191	O	|	|	|	|	0.92
34.083	0.00	0.36	0.189	O	|	|	|	|	0.91
34.167	0.00	0.35	0.186	O	|	|	|	|	0.89
34.250	0.00	0.35	0.184	O	|	|	|	|	0.88
34.333	0.00	0.34	0.181	O	|	|	|	|	0.87
34.417	0.00	0.34	0.179	O	|	|	|	|	0.86
34.500	0.00	0.33	0.177	O	|	|	|	|	0.85
34.583	0.00	0.33	0.174	O	|	|	|	|	0.84
34.667	0.00	0.33	0.172	O	|	|	|	|	0.83
34.750	0.00	0.32	0.170	O	|	|	|	|	0.82
34.833	0.00	0.32	0.168	O	|	|	|	|	0.81
34.917	0.00	0.31	0.166	O	|	|	|	|	0.80
35.000	0.00	0.31	0.163	O	|	|	|	|	0.79
35.083	0.00	0.30	0.161	O	|	|	|	|	0.78
35.167	0.00	0.30	0.159	O	|	|	|	|	0.77
35.250	0.00	0.30	0.157	O	|	|	|	|	0.76
35.333	0.00	0.29	0.155	O	|	|	|	|	0.75
35.417	0.00	0.29	0.153	O	|	|	|	|	0.74
35.500	0.00	0.29	0.151	O	|	|	|	|	0.73
35.583	0.00	0.28	0.149	O	|	|	|	|	0.72
35.667	0.00	0.28	0.147	O	|	|	|	|	0.71
35.750	0.00	0.27	0.145	O	|	|	|	|	0.70
35.833	0.00	0.27	0.143	O	|	|	|	|	0.69
35.917	0.00	0.27	0.142	O	|	|	|	|	0.68
36.000	0.00	0.26	0.140	O	|	|	|	|	0.67
36.083	0.00	0.26	0.138	O	|	|	|	|	0.66
36.167	0.00	0.26	0.136	O	|	|	|	|	0.65
36.250	0.00	0.25	0.134	O	|	|	|	|	0.65
36.333	0.00	0.25	0.133	O	|	|	|	|	0.64

36.417	0.00	0.25	0.131	O	|	|	|	|	0.63
36.500	0.00	0.24	0.129	O	|	|	|	|	0.62
36.583	0.00	0.24	0.128	O	|	|	|	|	0.61
36.667	0.00	0.24	0.126	O	|	|	|	|	0.61
36.750	0.00	0.23	0.124	O	|	|	|	|	0.60
36.833	0.00	0.23	0.123	O	|	|	|	|	0.59
36.917	0.00	0.23	0.121	O	|	|	|	|	0.58
37.000	0.00	0.23	0.120	O	|	|	|	|	0.57
37.083	0.00	0.22	0.118	O	|	|	|	|	0.57
37.167	0.00	0.22	0.116	O	|	|	|	|	0.56
37.250	0.00	0.22	0.115	O	|	|	|	|	0.55
37.333	0.00	0.21	0.113	O	|	|	|	|	0.55
37.417	0.00	0.21	0.112	O	|	|	|	|	0.54
37.500	0.00	0.21	0.111	O	|	|	|	|	0.53
37.583	0.00	0.21	0.109	O	|	|	|	|	0.52
37.667	0.00	0.20	0.108	O	|	|	|	|	0.52
37.750	0.00	0.20	0.106	O	|	|	|	|	0.51
37.833	0.00	0.20	0.105	O	|	|	|	|	0.50
37.917	0.00	0.20	0.104	O	|	|	|	|	0.50
38.000	0.00	0.19	0.102	O	|	|	|	|	0.49
38.083	0.00	0.19	0.101	O	|	|	|	|	0.49
38.167	0.00	0.19	0.100	O	|	|	|	|	0.48
38.250	0.00	0.19	0.098	O	|	|	|	|	0.47
38.333	0.00	0.18	0.097	O	|	|	|	|	0.47
38.417	0.00	0.18	0.096	O	|	|	|	|	0.46
38.500	0.00	0.18	0.095	O	|	|	|	|	0.45
38.583	0.00	0.18	0.093	O	|	|	|	|	0.45
38.667	0.00	0.17	0.092	O	|	|	|	|	0.44
38.750	0.00	0.17	0.091	O	|	|	|	|	0.44
38.833	0.00	0.17	0.090	O	|	|	|	|	0.43
38.917	0.00	0.17	0.089	O	|	|	|	|	0.43
39.000	0.00	0.17	0.087	O	|	|	|	|	0.42
39.083	0.00	0.16	0.086	O	|	|	|	|	0.42
39.167	0.00	0.16	0.085	O	|	|	|	|	0.41
39.250	0.00	0.16	0.084	O	|	|	|	|	0.40
39.333	0.00	0.16	0.083	O	|	|	|	|	0.40
39.417	0.00	0.15	0.082	O	|	|	|	|	0.39
39.500	0.00	0.15	0.081	O	|	|	|	|	0.39
39.583	0.00	0.15	0.080	O	|	|	|	|	0.38
39.667	0.00	0.15	0.079	O	|	|	|	|	0.38
39.750	0.00	0.15	0.078	O	|	|	|	|	0.37
39.833	0.00	0.15	0.077	O	|	|	|	|	0.37
39.917	0.00	0.14	0.076	O	|	|	|	|	0.36
40.000	0.00	0.14	0.075	O	|	|	|	|	0.36
40.083	0.00	0.14	0.074	O	|	|	|	|	0.36
40.167	0.00	0.14	0.073	O	|	|	|	|	0.35
40.250	0.00	0.14	0.072	O	|	|	|	|	0.35
40.333	0.00	0.13	0.071	O	|	|	|	|	0.34
40.417	0.00	0.13	0.070	O	|	|	|	|	0.34
40.500	0.00	0.13	0.069	O	|	|	|	|	0.33
40.583	0.00	0.13	0.068	O	|	|	|	|	0.33
40.667	0.00	0.13	0.067	O	|	|	|	|	0.32
40.750	0.00	0.13	0.067	O	|	|	|	|	0.32
40.833	0.00	0.12	0.066	O	|	|	|	|	0.32
40.917	0.00	0.12	0.065	O	|	|	|	|	0.31
41.000	0.00	0.12	0.064	O	|	|	|	|	0.31
41.083	0.00	0.12	0.063	O	|	|	|	|	0.30
41.167	0.00	0.12	0.062	O	|	|	|	|	0.30
41.250	0.00	0.12	0.062	O	|	|	|	|	0.30
41.333	0.00	0.11	0.061	O	|	|	|	|	0.29
41.417	0.00	0.11	0.060	O	|	|	|	|	0.29
41.500	0.00	0.11	0.059	O	|	|	|	|	0.28
41.583	0.00	0.11	0.058	O	|	|	|	|	0.28

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41.667    0.00    0.11      0.058  O       |       |       |       |     0.28
41.750    0.00    0.11      0.057  O       |       |       |       |     0.27
41.833    0.00    0.11      0.056  O       |       |       |       |     0.27
41.917    0.00    0.10      0.055  O       |       |       |       |     0.27
42.000    0.00    0.10      0.055  O       |       |       |       |     0.26
42.083    0.00    0.10      0.054  O       |       |       |       |     0.26
42.167    0.00    0.10      0.053  O       |       |       |       |     0.26
42.250    0.00    0.10      0.053  O       |       |       |       |     0.25

      Remaining water in basin =    0.05 (Ac.Ft)

      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   507
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =       18.400 (CFS)
                   Total volume =       2.310 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station       38.100 to Point/Station        8.100
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    689.30 (Ft.)
      Elevation difference =    3.45 (Ft.)
      Slope of channel =  0.005005 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     2.448(CFS)
      Nearest computed pipe diameter  =     12.00(In.)
      Calculated individual pipe flow  =     2.448(CFS)
      Normal flow depth in pipe =    9.54(In.)
      Flow top width inside pipe =    9.69(In.)
      Critical Depth =    0.67(Ft.)
      Pipe flow velocity =      3.66(Ft/s)
      Travel time through pipe =    3.14 min.


      Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =    18.400(CFS)
      Nearest computed pipe diameter  =     27.00(In.)
      Calculated individual pipe flow  =    18.400(CFS)
      Normal flow depth in pipe =   18.94(In.)
      Flow top width inside pipe =   24.71(In.)
      Critical Depth =    1.50(Ft.)
      Pipe flow velocity =      6.17(Ft/s)
      Travel time through pipe =    1.86 min.
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********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7841   Travel time =   1.86 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   2.6177
       dt(routing time-step) =   1.46 (min.),   c* =   0.9819

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        4.6       9.2      13.8      18.4
-----------------------------------------------------------------------
  0+ 5       0.0010      0.00  O         |         |         |         |
  0+10       0.0054      0.01  O         |         |         |         |
  0+15       0.0143      0.02  O         |         |         |         |
  0+20       0.0262      0.03  O         |         |         |         |
  0+25       0.0391      0.04  O         |         |         |         |
  0+30       0.0531      0.06  O         |         |         |         |
  0+35       0.0691      0.07  O         |         |         |         |
  0+40       0.0868      0.09  O         |         |         |         |
  0+45       0.1052      0.11  O         |         |         |         |
  0+50       0.1236      0.13  O         |         |         |         |
  0+55       0.1419      0.15  O         |         |         |         |
  1+ 0       0.1608      0.17  O         |         |         |         |
  1+ 5       0.1814      0.19  O         |         |         |         |
  1+10       0.2037      0.21  O         |         |         |         |
  1+15       0.2266      0.23  O         |         |         |         |
  1+20       0.2494      0.26  O         |         |         |         |
  1+25       0.2721      0.28  O         |         |         |         |
  1+30       0.2945      0.30  O         |         |         |         |
  1+35       0.3166      0.32  O         |         |         |         |
  1+40       0.3385      0.35  O         |         |         |         |
  1+45       0.3601      0.37  O         |         |         |         |
  1+50       0.3814      0.39  O         |         |         |         |
  1+55       0.3914      0.39  O         |         |         |         |
  2+ 0       0.3930      0.39  O         |         |         |         |
  2+ 5       0.3931      0.39  O         |         |         |         |
  2+10       0.3931      0.39  O         |         |         |         |
  2+15       0.3931      0.39  O         |         |         |         |
  2+20       0.3931      0.39  O         |         |         |         |
  2+25       0.3931      0.39  O         |         |         |         |
  2+30       0.3931      0.39  O         |         |         |         |
  2+35       0.3931      0.39  O         |         |         |         |
  2+40       0.3931      0.39  O         |         |         |         |
  2+45       0.3931      0.39  O         |         |         |         |
  2+50       0.3931      0.39  O         |         |         |         |
  2+55       0.3931      0.39  O         |         |         |         |
  3+ 0       0.3931      0.39  O         |         |         |         |
  3+ 5       0.3931      0.39  O         |         |         |         |
  3+10       0.3931      0.39  O         |         |         |         |
  3+15       0.3931      0.39  O         |         |         |         |
  3+20       0.3931      0.39  O         |         |         |         |
  3+25       0.3931      0.39  O         |         |         |         |
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3+30       0.3931      0.39  O         |         |         |         |
3+35       0.3931      0.39  O         |         |         |         |
3+40       0.3931      0.39  O         |         |         |         |
3+45       0.3931      0.39  O         |         |         |         |
3+50       0.3931      0.39  O         |         |         |         |
3+55       0.3931      0.39  O         |         |         |         |
4+ 0       0.3931      0.39  O         |         |         |         |
4+ 5       0.3931      0.39  O         |         |         |         |
4+10       0.3931      0.39  O         |         |         |         |
4+15       0.3931      0.39  O         |         |         |         |
4+20       0.3931      0.39  O         |         |         |         |
4+25       0.3931      0.39  O         |         |         |         |
4+30       0.3931      0.39  O         |         |         |         |
4+35       0.3931      0.39  O         |         |         |         |
4+40       0.3931      0.39  O         |         |         |         |
4+45       2.5412      3.48  |    O I  |         |         |         |
4+50       5.5170      6.43  |         |O I      |         |         |
4+55       7.4922      7.98  |         |     OI  |         |         |
5+ 0       8.6041      8.89  |         |       OI|         |         |
5+ 5       9.4607      9.72  |         |         OI        |         |
5+10      10.5435     10.91  |         |         | OI      |         |
5+15      11.9922     12.48  |         |         |     OI  |         |
5+20      13.5921     14.09  |         |         |        OI         |
5+25      15.2163     15.72  |         |         |         |  OI     |
5+30      17.0864     17.70  |         |         |         |      OI |
5+35      18.1751     18.40  |         |         |         |        OI
5+40      16.3189     15.41  |         |         |         |  I O    |
5+45      12.0439     10.54  |         |         | I   O   |         |
5+50       7.8324      6.61  |         |   I  O  |         |         |
5+55       4.8089      3.99  |       I O         |         |         |
6+ 0       2.9208      2.43  |    IO   |         |         |         |
6+ 5       1.7858      1.49  |  O      |         |         |         |
6+10       1.0548      0.86  |IO       |         |         |         |
6+15       0.5804      0.45  IO        |         |         |         |
6+20       0.4140      0.39  O         |         |         |         |
6+25       0.3934      0.39  O         |         |         |         |
6+30       0.3931      0.39  O         |         |         |         |
6+35       0.3931      0.39  O         |         |         |         |
6+40       0.3931      0.39  O         |         |         |         |
6+45       0.3931      0.39  O         |         |         |         |
6+50       0.3931      0.39  O         |         |         |         |
6+55       0.3931      0.39  O         |         |         |         |
7+ 0       0.3931      0.39  O         |         |         |         |
7+ 5       0.3931      0.39  O         |         |         |         |
7+10       0.3931      0.39  O         |         |         |         |
7+15       0.3931      0.39  O         |         |         |         |
7+20       0.3931      0.39  O         |         |         |         |
7+25       0.3931      0.39  O         |         |         |         |
7+30       0.3931      0.39  O         |         |         |         |
7+35       0.3931      0.39  O         |         |         |         |
7+40       0.3931      0.39  O         |         |         |         |
7+45       0.3931      0.39  O         |         |         |         |
7+50       0.3931      0.39  O         |         |         |         |
7+55       0.3931      0.39  O         |         |         |         |
8+ 0       0.3931      0.39  O         |         |         |         |
8+ 5       0.3931      0.39  O         |         |         |         |
8+10       0.3931      0.39  O         |         |         |         |
8+15       0.3931      0.39  O         |         |         |         |
8+20       0.3931      0.39  O         |         |         |         |
8+25       0.3931      0.39  O         |         |         |         |
8+30       0.3931      0.39  O         |         |         |         |
8+35       0.3931      0.39  O         |         |         |         |
8+40       0.3931      0.39  O         |         |         |         |
```

8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3931	0.39	O				
10+50	0.3931	0.39	O				
10+55	0.3931	0.39	O				
11+ 0	0.3931	0.39	O				
11+ 5	0.3931	0.39	O				
11+10	0.3931	0.39	O				
11+15	0.3931	0.39	O				
11+20	0.3931	0.39	O				
11+25	0.3931	0.39	O				
11+30	0.3931	0.39	O				
11+35	0.3931	0.39	O				
11+40	0.3931	0.39	O				
11+45	0.3931	0.39	O				
11+50	0.3931	0.39	O				
11+55	0.3931	0.39	O				
12+ 0	0.3931	0.39	O				
12+ 5	0.3931	0.39	O				
12+10	0.3931	0.39	O				
12+15	0.3931	0.39	O				
12+20	0.3931	0.39	O				
12+25	0.3931	0.39	O				
12+30	0.3931	0.39	O				
12+35	0.3931	0.39	O				
12+40	0.3931	0.39	O				
12+45	0.3931	0.39	O				
12+50	0.3931	0.39	O				
12+55	0.3931	0.39	O				
13+ 0	0.3931	0.39	O				
13+ 5	0.3931	0.39	O				
13+10	0.3931	0.39	O				
13+15	0.3931	0.39	O				
13+20	0.3931	0.39	O				
13+25	0.3931	0.39	O				
13+30	0.3931	0.39	O				
13+35	0.3931	0.39	O				
13+40	0.3931	0.39	O				
13+45	0.3931	0.39	O				
13+50	0.3931	0.39	O				
13+55	0.3931	0.39	O				

14+ 0	0.3931	0.39	O				
14+ 5	0.3931	0.39	O				
14+10	0.3931	0.39	O				
14+15	0.3931	0.39	O				
14+20	0.3931	0.39	O				
14+25	0.3931	0.39	O				
14+30	0.3931	0.39	O				
14+35	0.3931	0.39	O				
14+40	0.3931	0.39	O				
14+45	0.3931	0.39	O				
14+50	0.3931	0.39	O				
14+55	0.3931	0.39	O				
15+ 0	0.3931	0.39	O				
15+ 5	0.3931	0.39	O				
15+10	0.3931	0.39	O				
15+15	0.3931	0.39	O				
15+20	0.3931	0.39	O				
15+25	0.3931	0.39	O				
15+30	0.3931	0.39	O				
15+35	0.3931	0.39	O				
15+40	0.3931	0.39	O				
15+45	0.3931	0.39	O				
15+50	0.3931	0.39	O				
15+55	0.3931	0.39	O				
16+ 0	0.3931	0.39	O				
16+ 5	0.3931	0.39	O				
16+10	0.3931	0.39	O				
16+15	0.3931	0.39	O				
16+20	0.3931	0.39	O				
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16+30	0.3931	0.39	O				
16+35	0.3931	0.39	O				
16+40	0.3931	0.39	O				
16+45	0.3931	0.39	O				
16+50	0.3931	0.39	O				
16+55	0.3931	0.39	O				
17+ 0	0.3931	0.39	O				
17+ 5	0.3931	0.39	O				
17+10	0.3931	0.39	O				
17+15	0.3931	0.39	O				
17+20	0.3931	0.39	O				
17+25	0.3931	0.39	O				
17+30	0.3931	0.39	O				
17+35	0.3931	0.39	O				
17+40	0.3931	0.39	O				
17+45	0.3931	0.39	O				
17+50	0.3931	0.39	O				
17+55	0.3931	0.39	O				
18+ 0	0.3931	0.39	O				
18+ 5	0.3931	0.39	O				
18+10	0.3931	0.39	O				
18+15	0.3931	0.39	O				
18+20	0.3931	0.39	O				
18+25	0.3931	0.39	O				
18+30	0.3931	0.39	O				
18+35	0.3931	0.39	O				
18+40	0.3931	0.39	O				
18+45	0.3931	0.39	O				
18+50	0.3931	0.39	O				
18+55	0.3931	0.39	O				
19+ 0	0.3931	0.39	O				
19+ 5	0.3931	0.39	O				
19+10	0.3931	0.39	O				

19+15	0.3931	0.39	O				
19+20	0.3931	0.39	O				
19+25	0.3931	0.39	O				
19+30	0.3931	0.39	O				
19+35	0.3931	0.39	O				
19+40	0.3931	0.39	O				
19+45	0.3931	0.39	O				
19+50	0.3931	0.39	O				
19+55	0.3931	0.39	O				
20+ 0	0.3931	0.39	O				
20+ 5	0.3931	0.39	O				
20+10	0.3931	0.39	O				
20+15	0.3931	0.39	O				
20+20	0.3931	0.39	O				
20+25	0.3931	0.39	O				
20+30	0.3931	0.39	O				
20+35	0.3931	0.39	O				
20+40	0.3931	0.39	O				
20+45	0.3931	0.39	O				
20+50	0.3931	0.39	O				
20+55	0.3931	0.39	O				
21+ 0	0.3931	0.39	O				
21+ 5	0.3931	0.39	O				
21+10	0.3931	0.39	O				
21+15	0.3931	0.39	O				
21+20	0.3931	0.39	O				
21+25	0.3931	0.39	O				
21+30	0.3931	0.39	O				
21+35	0.3931	0.39	O				
21+40	0.3931	0.39	O				
21+45	0.3931	0.39	O				
21+50	0.3931	0.39	O				
21+55	0.3931	0.39	O				
22+ 0	0.3931	0.39	O				
22+ 5	0.3931	0.39	O				
22+10	0.3931	0.39	O				
22+15	0.3931	0.39	O				
22+20	0.3931	0.39	O				
22+25	0.3931	0.39	O				
22+30	0.3931	0.39	O				
22+35	0.3931	0.39	O				
22+40	0.3931	0.39	O				
22+45	0.3931	0.39	O				
22+50	0.3931	0.39	O				
22+55	0.3931	0.39	O				
23+ 0	0.3931	0.39	O				
23+ 5	0.3931	0.39	O				
23+10	0.3931	0.39	O				
23+15	0.3931	0.39	O				
23+20	0.3931	0.39	O				
23+25	0.3931	0.39	O				
23+30	0.3931	0.39	O				
23+35	0.3931	0.39	O				
23+40	0.3931	0.39	O				
23+45	0.3931	0.39	O				
23+50	0.3931	0.39	O				
23+55	0.3931	0.39	O				
24+ 0	0.3931	0.39	O				
24+ 5	0.3931	0.39	O				
24+10	0.3931	0.39	O				
24+15	0.3931	0.39	O				
24+20	0.3931	0.39	O				
24+25	0.3931	0.39	O				

24+30	0.3931	0.39	O				
24+35	0.3931	0.39	O				
24+40	0.3931	0.39	O				
24+45	0.3931	0.39	O				
24+50	0.3931	0.39	O				
24+55	0.3931	0.39	O				
25+ 0	0.3931	0.39	O				
25+ 5	0.3931	0.39	O				
25+10	0.3931	0.39	O				
25+15	0.3931	0.39	O				
25+20	0.3931	0.39	O				
25+25	0.3931	0.39	O				
25+30	0.3931	0.39	O				
25+35	0.3931	0.39	O				
25+40	0.3931	0.39	O				
25+45	0.3931	0.39	O				
25+50	0.3931	0.39	O				
25+55	0.3931	0.39	O				
26+ 0	0.3931	0.39	O				
26+ 5	0.3931	0.39	O				
26+10	0.3931	0.39	O				
26+15	0.3931	0.39	O				
26+20	0.3931	0.39	O				
26+25	0.3931	0.39	O				
26+30	0.3931	0.39	O				
26+35	0.3931	0.39	O				
26+40	0.3931	0.39	O				
26+45	0.3931	0.39	O				
26+50	0.3931	0.39	O				
26+55	0.3931	0.39	O				
27+ 0	0.3931	0.39	O				
27+ 5	0.3931	0.39	O				
27+10	0.3931	0.39	O				
27+15	0.3931	0.39	O				
27+20	0.3931	0.39	O				
27+25	0.3931	0.39	O				
27+30	0.3931	0.39	O				
27+35	0.3931	0.39	O				
27+40	0.3931	0.39	O				
27+45	0.3931	0.39	O				
27+50	0.3931	0.39	O				
27+55	0.3931	0.39	O				
28+ 0	0.3931	0.39	O				
28+ 5	0.3931	0.39	O				
28+10	0.3931	0.39	O				
28+15	0.3931	0.39	O				
28+20	0.3931	0.39	O				
28+25	0.3931	0.39	O				
28+30	0.3931	0.39	O				
28+35	0.3931	0.39	O				
28+40	0.3931	0.39	O				
28+45	0.3931	0.39	O				
28+50	0.3931	0.39	O				
28+55	0.3931	0.39	O				
29+ 0	0.3931	0.39	O				
29+ 5	0.3931	0.39	O				
29+10	0.3931	0.39	O				
29+15	0.3931	0.39	O				
29+20	0.3931	0.39	O				
29+25	0.3931	0.39	O				
29+30	0.3931	0.39	O				
29+35	0.3931	0.39	O				
29+40	0.3931	0.39	O				

29+45	0.3931	0.39	O				
29+50	0.3931	0.39	O				
29+55	0.3931	0.39	O				
30+ 0	0.3931	0.39	O				
30+ 5	0.3931	0.39	O				
30+10	0.3931	0.39	O				
30+15	0.3931	0.39	O				
30+20	0.3931	0.39	O				
30+25	0.3931	0.39	O				
30+30	0.3931	0.39	O				
30+35	0.3931	0.39	O				
30+40	0.3931	0.39	O				
30+45	0.3931	0.39	O				
30+50	0.3931	0.39	O				
30+55	0.3931	0.39	O				
31+ 0	0.3931	0.39	O				
31+ 5	0.3931	0.39	O				
31+10	0.3931	0.39	O				
31+15	0.3931	0.39	O				
31+20	0.3931	0.39	O				
31+25	0.3931	0.39	O				
31+30	0.3931	0.39	O				
31+35	0.3931	0.39	O				
31+40	0.3931	0.39	O				
31+45	0.3931	0.39	O				
31+50	0.3931	0.39	O				
31+55	0.3931	0.39	O				
32+ 0	0.3931	0.39	O				
32+ 5	0.3931	0.39	O				
32+10	0.3931	0.39	O				
32+15	0.3931	0.39	O				
32+20	0.3931	0.39	O				
32+25	0.3931	0.39	O				
32+30	0.3931	0.39	O				
32+35	0.3931	0.39	O				
32+40	0.3931	0.39	O				
32+45	0.3931	0.39	O				
32+50	0.3931	0.39	O				
32+55	0.3931	0.39	O				
33+ 0	0.3931	0.39	O				
33+ 5	0.3931	0.39	O				
33+10	0.3931	0.39	O				
33+15	0.3931	0.39	O				
33+20	0.3931	0.39	O				
33+25	0.3931	0.39	O				
33+30	0.3911	0.39	O				
33+35	0.3868	0.39	O				
33+40	0.3818	0.38	O				
33+45	0.3769	0.38	O				
33+50	0.3720	0.37	O				
33+55	0.3672	0.37	O				
34+ 0	0.3624	0.36	O				
34+ 5	0.3578	0.36	O				
34+10	0.3531	0.35	O				
34+15	0.3486	0.35	O				
34+20	0.3441	0.34	O				
34+25	0.3396	0.34	O				
34+30	0.3352	0.33	O				
34+35	0.3309	0.33	O				
34+40	0.3266	0.33	O				
34+45	0.3224	0.32	O				
34+50	0.3182	0.32	O				
34+55	0.3141	0.31	O				

35+ 0	0.3100	0.31	O	|	|	|	|
35+ 5	0.3060	0.30	O	|	|	|	|
35+10	0.3021	0.30	O	|	|	|	|
35+15	0.2982	0.30	O	|	|	|	|
35+20	0.2943	0.29	O	|	|	|	|
35+25	0.2905	0.29	O	|	|	|	|
35+30	0.2867	0.29	O	|	|	|	|
35+35	0.2830	0.28	O	|	|	|	|
35+40	0.2794	0.28	O	|	|	|	|
35+45	0.2758	0.27	O	|	|	|	|
35+50	0.2722	0.27	O	|	|	|	|
35+55	0.2687	0.27	O	|	|	|	|
36+ 0	0.2652	0.26	O	|	|	|	|
36+ 5	0.2618	0.26	O	|	|	|	|
36+10	0.2584	0.26	O	|	|	|	|
36+15	0.2551	0.25	O	|	|	|	|
36+20	0.2518	0.25	O	|	|	|	|
36+25	0.2485	0.25	O	|	|	|	|
36+30	0.2453	0.24	O	|	|	|	|
36+35	0.2421	0.24	O	|	|	|	|
36+40	0.2390	0.24	O	|	|	|	|
36+45	0.2359	0.23	O	|	|	|	|
36+50	0.2328	0.23	O	|	|	|	|
36+55	0.2298	0.23	O	|	|	|	|
37+ 0	0.2269	0.23	O	|	|	|	|
37+ 5	0.2239	0.22	O	|	|	|	|
37+10	0.2210	0.22	O	|	|	|	|
37+15	0.2182	0.22	O	|	|	|	|
37+20	0.2154	0.21	O	|	|	|	|
37+25	0.2126	0.21	O	|	|	|	|
37+30	0.2098	0.21	O	|	|	|	|
37+35	0.2071	0.21	O	|	|	|	|
37+40	0.2044	0.20	O	|	|	|	|
37+45	0.2018	0.20	O	|	|	|	|
37+50	0.1992	0.20	O	|	|	|	|
37+55	0.1966	0.20	O	|	|	|	|
38+ 0	0.1941	0.19	O	|	|	|	|
38+ 5	0.1915	0.19	O	|	|	|	|
38+10	0.1891	0.19	O	|	|	|	|
38+15	0.1866	0.19	O	|	|	|	|
38+20	0.1842	0.18	O	|	|	|	|
38+25	0.1818	0.18	O	|	|	|	|
38+30	0.1795	0.18	O	|	|	|	|
38+35	0.1772	0.18	O	|	|	|	|
38+40	0.1749	0.17	O	|	|	|	|
38+45	0.1726	0.17	O	|	|	|	|
38+50	0.1704	0.17	O	|	|	|	|
38+55	0.1682	0.17	O	|	|	|	|
39+ 0	0.1660	0.17	O	|	|	|	|
39+ 5	0.1639	0.16	O	|	|	|	|
39+10	0.1617	0.16	O	|	|	|	|
39+15	0.1596	0.16	O	|	|	|	|
39+20	0.1576	0.16	O	|	|	|	|
39+25	0.1555	0.15	O	|	|	|	|
39+30	0.1535	0.15	O	|	|	|	|
39+35	0.1515	0.15	O	|	|	|	|
39+40	0.1496	0.15	O	|	|	|	|
39+45	0.1476	0.15	O	|	|	|	|
39+50	0.1457	0.15	O	|	|	|	|
39+55	0.1439	0.14	O	|	|	|	|
40+ 0	0.1420	0.14	O	|	|	|	|
40+ 5	0.1402	0.14	O	|	|	|	|
40+10	0.1383	0.14	O	|	|	|	|

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   40+15       0.1366      0.14  O         |         |         |         |
   40+20       0.1348      0.13  O         |         |         |         |
   40+25       0.1330      0.13  O         |         |         |         |
   40+30       0.1313      0.13  O         |         |         |         |
   40+35       0.1296      0.13  O         |         |         |         |
   40+40       0.1280      0.13  O         |         |         |         |
   40+45       0.1263      0.13  O         |         |         |         |
   40+50       0.1247      0.12  O         |         |         |         |
   40+55       0.1231      0.12  O         |         |         |         |
   41+ 0       0.1215      0.12  O         |         |         |         |
   41+ 5       0.1199      0.12  O         |         |         |         |
   41+10       0.1183      0.12  O         |         |         |         |
   41+15       0.1168      0.12  O         |         |         |         |
   41+20       0.1153      0.11  O         |         |         |         |
   41+25       0.1138      0.11  O         |         |         |         |
   41+30       0.1123      0.11  O         |         |         |         |
   41+35       0.1109      0.11  O         |         |         |         |
   41+40       0.1095      0.11  O         |         |         |         |
   41+45       0.1080      0.11  O         |         |         |         |
   41+50       0.1066      0.11  O         |         |         |         |
   41+55       0.1053      0.10  O         |         |         |         |
   42+ 0       0.1039      0.10  O         |         |         |         |
   42+ 5       0.1026      0.10  O         |         |         |         |
   42+10       0.1012      0.10  O         |         |         |         |
   42+15       0.0999      0.10  O         |         |         |         |
   42+20       0.0303      0.00  O         |         |         |         |
   42+25       0.0000      0.00  O         |         |         |         |
---------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   509
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =       18.175 (CFS)
                   Total volume =       2.310 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station       38.100 to Point/Station        8.100
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ____________________________________________________________________
      Current stream hydrograph saved in file 27259PONDA106.rte
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =     0
                   Time interval =    0.0 (Min.)
                   Maximum/Peak flow rate =        0.000 (CFS)
                   Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA A (Pond A)- Q10yr24hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHA2410.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =   293
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        7.033 (CFS)
             Total volume =       3.289 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       40.000 to Point/Station       38.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    2.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.00(Ft.) Capacity = 0.39(CFS)

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 4.00(Ft.) Capacity = 0.39(CFS)

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.00(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 3.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.50(Ft.) Capacity = 39.99(CFS)

Total outflow at this depth = 40.38(CFS)

Total number of inflow hydrograph intervals = 293
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.208	0.393	0.207	0.209
2.000	0.457	0.393	0.456	0.458
3.000	0.751	0.393	0.750	0.752
4.000	1.091	0.393	1.090	1.092
5.000	1.480	40.379	1.341	1.619

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.8 3.52 5.28 7.03	Depth (Ft.)
0.083	0.11	0.00	0.000	O	0.00
0.167	0.25	0.00	0.002	OI	0.01
0.250	0.29	0.01	0.003	OI	0.02
0.333	0.35	0.01	0.006	OI	0.03
0.417	0.43	0.02	0.008	OI	0.04
0.500	0.45	0.02	0.011	O I	0.05
0.583	0.46	0.03	0.014	O I	0.07
0.667	0.46	0.03	0.017	O I	0.08
0.750	0.46	0.04	0.020	O I	0.10
0.833	0.52	0.04	0.023	O I	0.11
0.917	0.59	0.05	0.027	O I	0.13
1.000	0.61	0.06	0.030	O I	0.15
1.083	0.56	0.06	0.034	O I	0.16
1.167	0.49	0.07	0.037	O I	0.18
1.250	0.48	0.08	0.040	O I	0.19
1.333	0.47	0.08	0.043	O I	0.21
1.417	0.47	0.09	0.045	O I	0.22
1.500	0.46	0.09	0.048	O I	0.23
1.583	0.46	0.10	0.050	O I	0.24
1.667	0.46	0.10	0.053	O I	0.25
1.750	0.46	0.10	0.056	O I	0.27
1.833	0.52	0.11	0.058	O I	0.28
1.917	0.59	0.12	0.061	O I	0.29
2.000	0.61	0.12	0.065	O I	0.31
2.083	0.61	0.13	0.068	O I	0.33
2.167	0.62	0.13	0.071	O I	0.34
2.250	0.62	0.14	0.075	O I	0.36
2.333	0.62	0.15	0.078	O I	0.37
2.417	0.62	0.15	0.081	O I	0.39
2.500	0.62	0.16	0.084	O I	0.40
2.583	0.67	0.17	0.088	O I	0.42
2.667	0.75	0.17	0.091	O I	0.44
2.750	0.76	0.18	0.095	O I	0.46
2.833	0.77	0.19	0.099	O I	0.48
2.917	0.77	0.20	0.103	O I	0.50
3.000	0.77	0.20	0.107	O I	0.52
3.083	0.77	0.21	0.111	O I	0.53
3.167	0.77	0.22	0.115	O I	0.55
3.250	0.77	0.22	0.119	|O I	0.57
3.333	0.77	0.23	0.123	|O I	0.59
3.417	0.77	0.24	0.126	|O I	0.61
3.500	0.77	0.25	0.130	|O I	0.62
3.583	0.77	0.25	0.134	|O I	0.64
3.667	0.77	0.26	0.137	|O I	0.66
3.750	0.77	0.27	0.141	|O I	0.68
3.833	0.83	0.27	0.144	|O I	0.69
3.917	0.90	0.28	0.148	|O I	0.71
4.000	0.92	0.29	0.153	|O I	0.73
4.083	0.92	0.30	0.157	|O I	0.75
4.167	0.93	0.30	0.161	|O I	0.78
4.250	0.93	0.31	0.166	|O I	0.80
4.333	0.98	0.32	0.170	|O I	0.82
4.417	1.06	0.33	0.175	|O I	0.84
4.500	1.07	0.34	0.180	|O I	0.86
4.583	1.08	0.35	0.185	|O I	0.89
4.667	1.08	0.36	0.190	|O I	0.91
4.750	1.08	0.37	0.195	|O I	0.94
4.833	1.14	0.38	0.200	|O I	0.96

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 4.917    1.21    0.39      0.205  |O   I  |       |       |       |     0.99
 5.000    1.23    0.39      0.211  |O   I  |       |       |       |     1.01
 5.083    1.12    0.39      0.216  |O   I  |       |       |       |     1.03
 5.167    0.98    0.39      0.221  |O  I   |       |       |       |     1.05
 5.250    0.95    0.39      0.225  |O  I   |       |       |       |     1.07
 5.333    0.99    0.39      0.229  |O  I   |       |       |       |     1.08
 5.417    1.06    0.39      0.233  |O  I   |       |       |       |     1.10
 5.500    1.07    0.39      0.238  |O  I   |       |       |       |     1.12
 5.583    1.13    0.39      0.243  |O   I  |       |       |       |     1.14
 5.667    1.21    0.39      0.248  |O   I  |       |       |       |     1.16
 5.750    1.23    0.39      0.254  |O   I  |       |       |       |     1.18
 5.833    1.23    0.39      0.260  |O   I  |       |       |       |     1.21
 5.917    1.24    0.39      0.265  |O   I  |       |       |       |     1.23
 6.000    1.24    0.39      0.271  |O   I  |       |       |       |     1.25
 6.083    0.81    0.39      0.276  |O I    |       |       |       |     1.27
 6.167    0.25    0.39      0.276  |O      |       |       |       |     1.27
 6.250    0.13    0.39      0.275  IO      |       |       |       |     1.27
 6.333    0.08    0.39      0.273  IO      |       |       |       |     1.26
 6.417    0.06    0.39      0.271  IO      |       |       |       |     1.25
 6.500    0.06    0.39      0.269  IO      |       |       |       |     1.24
 6.583    0.16    0.39      0.267  IO      |       |       |       |     1.24
 6.667    0.29    0.39      0.266  |O      |       |       |       |     1.23
 6.750    0.32    0.39      0.265  |O      |       |       |       |     1.23
 6.833    0.34    0.39      0.264  |O      |       |       |       |     1.23
 6.917    0.36    0.39      0.264  |O      |       |       |       |     1.23
 7.000    0.37    0.39      0.264  |O      |       |       |       |     1.22
 7.083    0.38    0.39      0.264  |O      |       |       |       |     1.22
 7.167    0.39    0.39      0.264  |O      |       |       |       |     1.22
 7.250    0.40    0.39      0.264  |O      |       |       |       |     1.22
 7.333    0.50    0.39      0.264  |OI     |       |       |       |     1.23
 7.417    0.62    0.39      0.265  |OI     |       |       |       |     1.23
 7.500    0.66    0.39      0.267  |O I    |       |       |       |     1.24
 7.583    0.77    0.39      0.269  |O I    |       |       |       |     1.25
 7.667    0.90    0.39      0.272  |O  I   |       |       |       |     1.26
 7.750    0.94    0.39      0.276  |O  I   |       |       |       |     1.27
 7.833    1.05    0.39      0.280  |O  I   |       |       |       |     1.29
 7.917    1.18    0.39      0.285  |O   I  |       |       |       |     1.31
 8.000    1.22    0.39      0.291  |O   I  |       |       |       |     1.33
 8.083    1.41    0.39      0.297  |O    I |       |       |       |     1.36
 8.167    1.66    0.39      0.305  |O     I|       |       |       |     1.39
 8.250    1.72    0.39      0.314  |O     I|       |       |       |     1.42
 8.333    1.76    0.39      0.323  |O     I|       |       |       |     1.46
 8.417    1.78    0.39      0.332  |O      I       |       |       |     1.50
 8.500    1.79    0.39      0.342  |O      I       |       |       |     1.54
 8.583    1.89    0.39      0.352  |O      I       |       |       |     1.58
 8.667    2.01    0.39      0.363  |O      |I      |       |       |     1.62
 8.750    2.05    0.39      0.374  |O      |I      |       |       |     1.67
 8.833    2.16    0.39      0.386  |O      |I      |       |       |     1.71
 8.917    2.29    0.39      0.398  |O      | I     |       |       |     1.76
 9.000    2.32    0.39      0.412  |O      | I     |       |       |     1.82
 9.083    2.52    0.39      0.426  |O      |  I    |       |       |     1.87
 9.167    2.77    0.39      0.441  |O      |   I   |       |       |     1.94
 9.250    2.83    0.39      0.458  |O      |   I   |       |       |     2.00
 9.333    2.95    0.39      0.475  |O      |    I  |       |       |     2.06
 9.417    3.09    0.39      0.493  |O      |     I |       |       |     2.12
 9.500    3.13    0.39      0.512  |O      |     I |       |       |     2.19
 9.583    3.24    0.39      0.531  |O      |     I |       |       |     2.25
 9.667    3.37    0.39      0.551  |O      |      I|       |       |     2.32
 9.750    3.40    0.39      0.571  |O      |      I|       |       |     2.39
 9.833    3.51    0.39      0.592  |O      |      I|       |       |     2.46
 9.917    3.64    0.39      0.614  |O      |       I       |       |     2.54
10.000    3.68    0.39      0.637  |O      |       I       |       |     2.61
10.083    3.08    0.39      0.657  |O      |     I |       |       |     2.68
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10.167    2.29    0.39      0.673  |O      | I     |       |       |     2.74
10.250    2.11    0.39      0.686  |O      |I      |       |       |     2.78
10.333    2.04    0.39      0.697  |O      |I      |       |       |     2.82
10.417    2.01    0.39      0.709  |O      |I      |       |       |     2.86
10.500    2.00    0.39      0.720  |O      |I      |       |       |     2.89
10.583    2.45    0.39      0.732  |O      |  I    |       |       |     2.94
10.667    3.04    0.39      0.748  |O      |    I  |       |       |     2.99
10.750    3.18    0.39      0.767  |O      |     I |       |       |     3.05
10.833    3.25    0.39      0.787  |O      |     I |       |       |     3.10
10.917    3.28    0.39      0.806  |O      |     I |       |       |     3.16
11.000    3.30    0.39      0.826  |O      |      I|       |       |     3.22
11.083    3.22    0.39      0.846  |O      |     I |       |       |     3.28
11.167    3.11    0.39      0.865  |O      |     I |       |       |     3.34
11.250    3.10    0.39      0.884  |O      |     I |       |       |     3.39
11.333    3.09    0.39      0.902  |O      |     I |       |       |     3.45
11.417    3.09    0.39      0.921  |O      |     I |       |       |     3.50
11.500    3.10    0.39      0.940  |O      |     I |       |       |     3.55
11.583    2.93    0.39      0.958  |O      |    I  |       |       |     3.61
11.667    2.71    0.39      0.974  |O      |   I   |       |       |     3.66
11.750    2.66    0.39      0.990  |O      |   I   |       |       |     3.70
11.833    2.74    0.39      1.006  |O      |   I   |       |       |     3.75
11.917    2.85    0.39      1.023  |O      |   I   |       |       |     3.80
12.000    2.88    0.39      1.040  |O      |    I  |       |       |     3.85
12.083    3.52    0.39      1.059  |O      |      I|       |       |     3.91
12.167    4.34    0.39      1.083  |O      |       |  I    |       |     3.98
12.250    4.54    1.93      1.106  |       O       |   I   |       |     4.04
12.333    4.71    3.34      1.120  |       |      O|    I  |       |     4.07
12.417    4.88    4.10      1.127  |       |       | O   I |       |     4.09
12.500    4.93    4.52      1.131  |       |       |   O I |       |     4.10
12.583    5.12    4.78      1.134  |       |       |    O I|       |     4.11
12.667    5.37    5.02      1.136  |       |       |     O I       |     4.12
12.750    5.43    5.22      1.138  |       |       |      OI       |     4.12
12.833    5.55    5.36      1.139  |       |       |       OI      |     4.12
12.917    5.68    5.49      1.141  |       |       |       OI      |     4.13
13.000    5.72    5.60      1.142  |       |       |       |OI     |     4.13
13.083    6.18    5.78      1.143  |       |       |       | O I   |     4.13
13.167    6.77    6.15      1.147  |       |       |       |  O  I |     4.14
13.250    6.91    6.51      1.151  |       |       |       |    O I|     4.15
13.333    6.98    6.74      1.153  |       |       |       |     OI|     4.16
13.417    7.02    6.87      1.154  |       |       |       |      O|     4.16
13.500    7.03    6.95      1.155  |       |       |       |      OI     4.16
13.583    6.07    6.74      1.153  |       |       |       |  I  O |     4.16
13.667    4.81    6.06      1.146  |       |       |    I  |  O    |     4.14
13.750    4.52    5.33      1.139  |       |       |   I   O       |     4.12
13.833    4.40    4.88      1.135  |       |       |   I O |       |     4.11
13.917    4.35    4.61      1.132  |       |       |  IO   |       |     4.11
14.000    4.33    4.47      1.131  |       |       |  IO   |       |     4.10
14.083    4.69    4.49      1.131  |       |       |   OI  |       |     4.10
14.167    5.16    4.72      1.133  |       |       |    O I|       |     4.11
14.250    5.27    4.98      1.136  |       |       |     OI|       |     4.11
14.333    5.24    5.12      1.137  |       |       |      O|       |     4.12
14.417    5.15    5.16      1.137  |       |       |      O|       |     4.12
14.500    5.14    5.15      1.137  |       |       |      O|       |     4.12
14.583    5.14    5.15      1.137  |       |       |      O|       |     4.12
14.667    5.14    5.14      1.137  |       |       |      O|       |     4.12
14.750    5.14    5.14      1.137  |       |       |      O|       |     4.12
14.833    5.06    5.12      1.137  |       |       |      O|       |     4.12
14.917    4.95    5.06      1.136  |       |       |     IO|       |     4.12
15.000    4.93    5.00      1.136  |       |       |     O |       |     4.12
15.083    4.84    4.94      1.135  |       |       |     O |       |     4.11
15.167    4.73    4.86      1.134  |       |       |    IO |       |     4.11
15.250    4.70    4.78      1.134  |       |       |    O  |       |     4.11
15.333    4.61    4.72      1.133  |       |       |   IO  |       |     4.11
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15.417	4.50	4.63	1.132	|	|	| IO	|	|	4.11
15.500	4.47	4.56	1.131	|	|	| O	|	|	4.10
15.583	4.12	4.42	1.130	|	|	| I O	|	|	4.10
15.667	3.66	4.14	1.127	|	|	I O	|	|	4.09
15.750	3.55	3.86	1.125	|	|	IO	|	|	4.09
15.833	3.51	3.69	1.123	|	|	IO	|	|	4.08
15.917	3.50	3.59	1.122	|	|	IO	|	|	4.08
16.000	3.50	3.54	1.122	|	|	IO	|	|	4.08
16.083	2.48	3.25	1.119	|	| I O |		|	|	4.07
16.167	1.15	2.50	1.112	| I	| O	|	|	|	4.05
16.250	0.84	1.71	1.104	| I O|		|	|	|	4.03
16.333	0.71	1.22	1.099	| I O	|	|	|	|	4.02
16.417	0.64	0.94	1.096	| I O	|	|	|	|	4.01
16.500	0.62	0.78	1.095	| IO	|	|	|	|	4.01
16.583	0.56	0.68	1.094	| IO	|	|	|	|	4.01
16.667	0.49	0.60	1.093	| O	|	|	|	|	4.01
16.750	0.48	0.54	1.092	| O	|	|	|	|	4.00
16.833	0.47	0.50	1.092	| O	|	|	|	|	4.00
16.917	0.47	0.49	1.092	| O	|	|	|	|	4.00
17.000	0.46	0.47	1.092	| O	|	|	|	|	4.00
17.083	0.33	0.43	1.091	|O	|	|	|	|	4.00
17.167	0.16	0.39	1.090	IO	|	|	|	|	4.00
17.250	0.12	0.39	1.088	IO	|	|	|	|	3.99
17.333	0.11	0.39	1.087	IO	|	|	|	|	3.99
17.417	0.11	0.39	1.085	IO	|	|	|	|	3.98
17.500	0.11	0.39	1.083	IO	|	|	|	|	3.98
17.583	0.11	0.39	1.081	IO	|	|	|	|	3.97
17.667	0.12	0.39	1.079	IO	|	|	|	|	3.96
17.750	0.13	0.39	1.077	IO	|	|	|	|	3.96
17.833	0.30	0.39	1.076	|O	|	|	|	|	3.96
17.917	0.53	0.39	1.076	|OI	|	|	|	|	3.96
18.000	0.58	0.39	1.077	|OI	|	|	|	|	3.96
18.083	0.60	0.39	1.078	|OI	|	|	|	|	3.96
18.167	0.62	0.39	1.080	|OI	|	|	|	|	3.97
18.250	0.62	0.39	1.081	|OI	|	|	|	|	3.97
18.333	0.62	0.39	1.083	|OI	|	|	|	|	3.98
18.417	0.62	0.39	1.085	|OI	|	|	|	|	3.98
18.500	0.62	0.39	1.086	|OI	|	|	|	|	3.99
18.583	0.56	0.39	1.087	|OI	|	|	|	|	3.99
18.667	0.49	0.39	1.088	|OI	|	|	|	|	3.99
18.750	0.48	0.39	1.089	|OI	|	|	|	|	3.99
18.833	0.41	0.39	1.089	|O	|	|	|	|	4.00
18.917	0.34	0.39	1.089	|O	|	|	|	|	3.99
19.000	0.32	0.39	1.089	|O	|	|	|	|	3.99
19.083	0.37	0.39	1.089	|O	|	|	|	|	3.99
19.167	0.44	0.39	1.089	|O	|	|	|	|	3.99
19.250	0.45	0.39	1.089	|OI	|	|	|	|	3.99
19.333	0.51	0.39	1.090	|OI	|	|	|	|	4.00
19.417	0.59	0.39	1.091	|OI	|	|	|	|	4.00
19.500	0.61	0.47	1.092	| O	|	|	|	|	4.00
19.583	0.56	0.53	1.092	| O	|	|	|	|	4.00
19.667	0.49	0.53	1.092	| O	|	|	|	|	4.00
19.750	0.48	0.51	1.092	| O	|	|	|	|	4.00
19.833	0.41	0.47	1.092	|IO	|	|	|	|	4.00
19.917	0.34	0.42	1.091	|O	|	|	|	|	4.00
20.000	0.32	0.39	1.091	|O	|	|	|	|	4.00
20.083	0.37	0.39	1.090	|O	|	|	|	|	4.00
20.167	0.44	0.39	1.090	|O	|	|	|	|	4.00
20.250	0.45	0.39	1.091	|OI	|	|	|	|	4.00
20.333	0.46	0.42	1.091	|OI	|	|	|	|	4.00
20.417	0.46	0.44	1.091	|OI	|	|	|	|	4.00
20.500	0.46	0.45	1.092	| O	|	|	|	|	4.00
20.583	0.46	0.46	1.092	| O	|	|	|	|	4.00

20.667	0.46	0.46	1.092	| O	|	|	|	4.00
20.750	0.46	0.46	1.092	| O	|	|	|	4.00
20.833	0.41	0.45	1.092	|IO	|	|	|	4.00
20.917	0.34	0.41	1.091	|O	|	|	|	4.00
21.000	0.32	0.39	1.091	|O	|	|	|	4.00
21.083	0.37	0.39	1.090	|O	|	|	|	4.00
21.167	0.44	0.39	1.090	|O	|	|	|	4.00
21.250	0.45	0.39	1.091	|OI	|	|	|	4.00
21.333	0.41	0.39	1.091	|O	|	|	|	4.00
21.417	0.34	0.39	1.091	|O	|	|	|	4.00
21.500	0.32	0.39	1.090	|O	|	|	|	4.00
21.583	0.37	0.39	1.090	|O	|	|	|	4.00
21.667	0.44	0.39	1.090	|O	|	|	|	4.00
21.750	0.45	0.39	1.091	|OI	|	|	|	4.00
21.833	0.41	0.39	1.091	|O	|	|	|	4.00
21.917	0.34	0.39	1.091	|O	|	|	|	4.00
22.000	0.32	0.39	1.090	|O	|	|	|	4.00
22.083	0.37	0.39	1.090	|O	|	|	|	4.00
22.167	0.44	0.39	1.090	|O	|	|	|	4.00
22.250	0.45	0.39	1.090	|OI	|	|	|	4.00
22.333	0.41	0.39	1.091	|O	|	|	|	4.00
22.417	0.34	0.39	1.090	|O	|	|	|	4.00
22.500	0.32	0.39	1.090	|O	|	|	|	4.00
22.583	0.31	0.39	1.089	|O	|	|	|	4.00
22.667	0.31	0.39	1.089	|O	|	|	|	3.99
22.750	0.31	0.39	1.088	|O	|	|	|	3.99
22.833	0.31	0.39	1.088	|O	|	|	|	3.99
22.917	0.31	0.39	1.087	|O	|	|	|	3.99
23.000	0.31	0.39	1.087	|O	|	|	|	3.99
23.083	0.31	0.39	1.086	|O	|	|	|	3.99
23.167	0.31	0.39	1.085	|O	|	|	|	3.98
23.250	0.31	0.39	1.085	|O	|	|	|	3.98
23.333	0.31	0.39	1.084	|O	|	|	|	3.98
23.417	0.31	0.39	1.084	|O	|	|	|	3.98
23.500	0.31	0.39	1.083	|O	|	|	|	3.98
23.583	0.31	0.39	1.083	|O	|	|	|	3.98
23.667	0.31	0.39	1.082	|O	|	|	|	3.97
23.750	0.31	0.39	1.081	|O	|	|	|	3.97
23.833	0.31	0.39	1.081	|O	|	|	|	3.97
23.917	0.31	0.39	1.080	|O	|	|	|	3.97
24.000	0.31	0.39	1.080	|O	|	|	|	3.97
24.083	0.20	0.39	1.079	IO	|	|	|	3.96
24.167	0.06	0.39	1.077	IO	|	|	|	3.96
24.250	0.02	0.39	1.074	IO	|	|	|	3.95
24.333	0.01	0.39	1.072	IO	|	|	|	3.94
24.417	0.00	0.39	1.069	IO	|	|	|	3.94
24.500	0.00	0.39	1.066	IO	|	|	|	3.93
24.583	0.00	0.39	1.064	IO	|	|	|	3.92
24.667	0.00	0.39	1.061	IO	|	|	|	3.91
24.750	0.00	0.39	1.058	IO	|	|	|	3.90
24.833	0.00	0.39	1.056	IO	|	|	|	3.90
24.917	0.00	0.39	1.053	IO	|	|	|	3.89
25.000	0.00	0.39	1.050	IO	|	|	|	3.88
25.083	0.00	0.39	1.048	IO	|	|	|	3.87
25.167	0.00	0.39	1.045	IO	|	|	|	3.86
25.250	0.00	0.39	1.042	IO	|	|	|	3.86
25.333	0.00	0.39	1.039	IO	|	|	|	3.85
25.417	0.00	0.39	1.037	IO	|	|	|	3.84
25.500	0.00	0.39	1.034	IO	|	|	|	3.83
25.583	0.00	0.39	1.031	IO	|	|	|	3.82
25.667	0.00	0.39	1.029	IO	|	|	|	3.82
25.750	0.00	0.39	1.026	IO	|	|	|	3.81
25.833	0.00	0.39	1.023	IO	|	|	|	3.80

25.917	0.00	0.39	1.020	IO	|	|	|	|	3.79
26.000	0.00	0.39	1.018	IO	|	|	|	|	3.78
26.083	0.00	0.39	1.015	IO	|	|	|	|	3.78
26.167	0.00	0.39	1.012	IO	|	|	|	|	3.77
26.250	0.00	0.39	1.010	IO	|	|	|	|	3.76
26.333	0.00	0.39	1.007	IO	|	|	|	|	3.75
26.417	0.00	0.39	1.004	IO	|	|	|	|	3.74
26.500	0.00	0.39	1.002	IO	|	|	|	|	3.74
26.583	0.00	0.39	0.999	IO	|	|	|	|	3.73
26.667	0.00	0.39	0.996	IO	|	|	|	|	3.72
26.750	0.00	0.39	0.993	IO	|	|	|	|	3.71
26.833	0.00	0.39	0.991	IO	|	|	|	|	3.71
26.917	0.00	0.39	0.988	IO	|	|	|	|	3.70
27.000	0.00	0.39	0.985	IO	|	|	|	|	3.69
27.083	0.00	0.39	0.983	IO	|	|	|	|	3.68
27.167	0.00	0.39	0.980	IO	|	|	|	|	3.67
27.250	0.00	0.39	0.977	IO	|	|	|	|	3.67
27.333	0.00	0.39	0.974	IO	|	|	|	|	3.66
27.417	0.00	0.39	0.972	IO	|	|	|	|	3.65
27.500	0.00	0.39	0.969	IO	|	|	|	|	3.64
27.583	0.00	0.39	0.966	IO	|	|	|	|	3.63
27.667	0.00	0.39	0.964	IO	|	|	|	|	3.63
27.750	0.00	0.39	0.961	IO	|	|	|	|	3.62
27.833	0.00	0.39	0.958	IO	|	|	|	|	3.61
27.917	0.00	0.39	0.956	IO	|	|	|	|	3.60
28.000	0.00	0.39	0.953	IO	|	|	|	|	3.59
28.083	0.00	0.39	0.950	IO	|	|	|	|	3.59
28.167	0.00	0.39	0.947	IO	|	|	|	|	3.58
28.250	0.00	0.39	0.945	IO	|	|	|	|	3.57
28.333	0.00	0.39	0.942	IO	|	|	|	|	3.56
28.417	0.00	0.39	0.939	IO	|	|	|	|	3.55
28.500	0.00	0.39	0.937	IO	|	|	|	|	3.55
28.583	0.00	0.39	0.934	IO	|	|	|	|	3.54
28.667	0.00	0.39	0.931	IO	|	|	|	|	3.53
28.750	0.00	0.39	0.928	IO	|	|	|	|	3.52
28.833	0.00	0.39	0.926	IO	|	|	|	|	3.51
28.917	0.00	0.39	0.923	IO	|	|	|	|	3.51
29.000	0.00	0.39	0.920	IO	|	|	|	|	3.50
29.083	0.00	0.39	0.918	IO	|	|	|	|	3.49
29.167	0.00	0.39	0.915	IO	|	|	|	|	3.48
29.250	0.00	0.39	0.912	IO	|	|	|	|	3.47
29.333	0.00	0.39	0.909	IO	|	|	|	|	3.47
29.417	0.00	0.39	0.907	IO	|	|	|	|	3.46
29.500	0.00	0.39	0.904	IO	|	|	|	|	3.45
29.583	0.00	0.39	0.901	IO	|	|	|	|	3.44
29.667	0.00	0.39	0.899	IO	|	|	|	|	3.43
29.750	0.00	0.39	0.896	IO	|	|	|	|	3.43
29.833	0.00	0.39	0.893	IO	|	|	|	|	3.42
29.917	0.00	0.39	0.891	IO	|	|	|	|	3.41
30.000	0.00	0.39	0.888	IO	|	|	|	|	3.40
30.083	0.00	0.39	0.885	IO	|	|	|	|	3.39
30.167	0.00	0.39	0.882	IO	|	|	|	|	3.39
30.250	0.00	0.39	0.880	IO	|	|	|	|	3.38
30.333	0.00	0.39	0.877	IO	|	|	|	|	3.37
30.417	0.00	0.39	0.874	IO	|	|	|	|	3.36
30.500	0.00	0.39	0.872	IO	|	|	|	|	3.35
30.583	0.00	0.39	0.869	IO	|	|	|	|	3.35
30.667	0.00	0.39	0.866	IO	|	|	|	|	3.34
30.750	0.00	0.39	0.863	IO	|	|	|	|	3.33
30.833	0.00	0.39	0.861	IO	|	|	|	|	3.32
30.917	0.00	0.39	0.858	IO	|	|	|	|	3.31
31.000	0.00	0.39	0.855	IO	|	|	|	|	3.31
31.083	0.00	0.39	0.853	IO	|	|	|	|	3.30

31.167	0.00	0.39	0.850	IO					3.29
31.250	0.00	0.39	0.847	IO					3.28
31.333	0.00	0.39	0.845	IO					3.28
31.417	0.00	0.39	0.842	IO					3.27
31.500	0.00	0.39	0.839	IO					3.26
31.583	0.00	0.39	0.836	IO					3.25
31.667	0.00	0.39	0.834	IO					3.24
31.750	0.00	0.39	0.831	IO					3.24
31.833	0.00	0.39	0.828	IO					3.23
31.917	0.00	0.39	0.826	IO					3.22
32.000	0.00	0.39	0.823	IO					3.21
32.083	0.00	0.39	0.820	IO					3.20
32.167	0.00	0.39	0.817	IO					3.20
32.250	0.00	0.39	0.815	IO					3.19
32.333	0.00	0.39	0.812	IO					3.18
32.417	0.00	0.39	0.809	IO					3.17
32.500	0.00	0.39	0.807	IO					3.16
32.583	0.00	0.39	0.804	IO					3.16
32.667	0.00	0.39	0.801	IO					3.15
32.750	0.00	0.39	0.799	IO					3.14
32.833	0.00	0.39	0.796	IO					3.13
32.917	0.00	0.39	0.793	IO					3.12
33.000	0.00	0.39	0.790	IO					3.12
33.083	0.00	0.39	0.788	IO					3.11
33.167	0.00	0.39	0.785	IO					3.10
33.250	0.00	0.39	0.782	IO					3.09
33.333	0.00	0.39	0.780	IO					3.08
33.417	0.00	0.39	0.777	IO					3.08
33.500	0.00	0.39	0.774	IO					3.07
33.583	0.00	0.39	0.771	IO					3.06
33.667	0.00	0.39	0.769	IO					3.05
33.750	0.00	0.39	0.766	IO					3.04
33.833	0.00	0.39	0.763	IO					3.04
33.917	0.00	0.39	0.761	IO					3.03
34.000	0.00	0.39	0.758	IO					3.02
34.083	0.00	0.39	0.755	IO					3.01
34.167	0.00	0.39	0.752	IO					3.00
34.250	0.00	0.39	0.750	IO					3.00
34.333	0.00	0.39	0.747	IO					2.99
34.417	0.00	0.39	0.744	IO					2.98
34.500	0.00	0.39	0.742	IO					2.97
34.583	0.00	0.39	0.739	IO					2.96
34.667	0.00	0.39	0.736	IO					2.95
34.750	0.00	0.39	0.734	IO					2.94
34.833	0.00	0.39	0.731	IO					2.93
34.917	0.00	0.39	0.728	IO					2.92
35.000	0.00	0.39	0.725	IO					2.91
35.083	0.00	0.39	0.723	IO					2.90
35.167	0.00	0.39	0.720	IO					2.89
35.250	0.00	0.39	0.717	IO					2.89
35.333	0.00	0.39	0.715	IO					2.88
35.417	0.00	0.39	0.712	IO					2.87
35.500	0.00	0.39	0.709	IO					2.86
35.583	0.00	0.39	0.706	IO					2.85
35.667	0.00	0.39	0.704	IO					2.84
35.750	0.00	0.39	0.701	IO					2.83
35.833	0.00	0.39	0.698	IO					2.82
35.917	0.00	0.39	0.696	IO					2.81
36.000	0.00	0.39	0.693	IO					2.80
36.083	0.00	0.39	0.690	IO					2.79
36.167	0.00	0.39	0.688	IO					2.78
36.250	0.00	0.39	0.685	IO					2.77
36.333	0.00	0.39	0.682	IO					2.77

36.417	0.00	0.39	0.679	IO					2.76
36.500	0.00	0.39	0.677	IO					2.75
36.583	0.00	0.39	0.674	IO					2.74
36.667	0.00	0.39	0.671	IO					2.73
36.750	0.00	0.39	0.669	IO					2.72
36.833	0.00	0.39	0.666	IO					2.71
36.917	0.00	0.39	0.663	IO					2.70
37.000	0.00	0.39	0.660	IO					2.69
37.083	0.00	0.39	0.658	IO					2.68
37.167	0.00	0.39	0.655	IO					2.67
37.250	0.00	0.39	0.652	IO					2.66
37.333	0.00	0.39	0.650	IO					2.66
37.417	0.00	0.39	0.647	IO					2.65
37.500	0.00	0.39	0.644	IO					2.64
37.583	0.00	0.39	0.641	IO					2.63
37.667	0.00	0.39	0.639	IO					2.62
37.750	0.00	0.39	0.636	IO					2.61
37.833	0.00	0.39	0.633	IO					2.60
37.917	0.00	0.39	0.631	IO					2.59
38.000	0.00	0.39	0.628	IO					2.58
38.083	0.00	0.39	0.625	IO					2.57
38.167	0.00	0.39	0.623	IO					2.56
38.250	0.00	0.39	0.620	IO					2.55
38.333	0.00	0.39	0.617	IO					2.54
38.417	0.00	0.39	0.614	IO					2.54
38.500	0.00	0.39	0.612	IO					2.53
38.583	0.00	0.39	0.609	IO					2.52
38.667	0.00	0.39	0.606	IO					2.51
38.750	0.00	0.39	0.604	IO					2.50
38.833	0.00	0.39	0.601	IO					2.49
38.917	0.00	0.39	0.598	IO					2.48
39.000	0.00	0.39	0.595	IO					2.47
39.083	0.00	0.39	0.593	IO					2.46
39.167	0.00	0.39	0.590	IO					2.45
39.250	0.00	0.39	0.587	IO					2.44
39.333	0.00	0.39	0.585	IO					2.43
39.417	0.00	0.39	0.582	IO					2.42
39.500	0.00	0.39	0.579	IO					2.42
39.583	0.00	0.39	0.577	IO					2.41
39.667	0.00	0.39	0.574	IO					2.40
39.750	0.00	0.39	0.571	IO					2.39
39.833	0.00	0.39	0.568	IO					2.38
39.917	0.00	0.39	0.566	IO					2.37
40.000	0.00	0.39	0.563	IO					2.36
40.083	0.00	0.39	0.560	IO					2.35
40.167	0.00	0.39	0.558	IO					2.34
40.250	0.00	0.39	0.555	IO					2.33
40.333	0.00	0.39	0.552	IO					2.32
40.417	0.00	0.39	0.549	IO					2.31
40.500	0.00	0.39	0.547	IO					2.31
40.583	0.00	0.39	0.544	IO					2.30
40.667	0.00	0.39	0.541	IO					2.29
40.750	0.00	0.39	0.539	IO					2.28
40.833	0.00	0.39	0.536	IO					2.27
40.917	0.00	0.39	0.533	IO					2.26
41.000	0.00	0.39	0.531	IO					2.25
41.083	0.00	0.39	0.528	IO					2.24
41.167	0.00	0.39	0.525	IO					2.23
41.250	0.00	0.39	0.522	IO					2.22
41.333	0.00	0.39	0.520	IO					2.21
41.417	0.00	0.39	0.517	IO					2.20
41.500	0.00	0.39	0.514	IO					2.19
41.583	0.00	0.39	0.512	IO					2.19

41.667	0.00	0.39	0.509	IO	|	|	|	|	2.18
41.750	0.00	0.39	0.506	IO	|	|	|	|	2.17
41.833	0.00	0.39	0.503	IO	|	|	|	|	2.16
41.917	0.00	0.39	0.501	IO	|	|	|	|	2.15
42.000	0.00	0.39	0.498	IO	|	|	|	|	2.14
42.083	0.00	0.39	0.495	IO	|	|	|	|	2.13
42.167	0.00	0.39	0.493	IO	|	|	|	|	2.12
42.250	0.00	0.39	0.490	IO	|	|	|	|	2.11
42.333	0.00	0.39	0.487	IO	|	|	|	|	2.10
42.417	0.00	0.39	0.484	IO	|	|	|	|	2.09
42.500	0.00	0.39	0.482	IO	|	|	|	|	2.08
42.583	0.00	0.39	0.479	IO	|	|	|	|	2.08
42.667	0.00	0.39	0.476	IO	|	|	|	|	2.07
42.750	0.00	0.39	0.474	IO	|	|	|	|	2.06
42.833	0.00	0.39	0.471	IO	|	|	|	|	2.05
42.917	0.00	0.39	0.468	IO	|	|	|	|	2.04
43.000	0.00	0.39	0.466	IO	|	|	|	|	2.03
43.083	0.00	0.39	0.463	IO	|	|	|	|	2.02
43.167	0.00	0.39	0.460	IO	|	|	|	|	2.01
43.250	0.00	0.39	0.457	IO	|	|	|	|	2.00
43.333	0.00	0.39	0.455	IO	|	|	|	|	1.99
43.417	0.00	0.39	0.452	IO	|	|	|	|	1.98
43.500	0.00	0.39	0.449	IO	|	|	|	|	1.97
43.583	0.00	0.39	0.447	IO	|	|	|	|	1.96
43.667	0.00	0.39	0.444	IO	|	|	|	|	1.95
43.750	0.00	0.39	0.441	IO	|	|	|	|	1.94
43.833	0.00	0.39	0.438	IO	|	|	|	|	1.93
43.917	0.00	0.39	0.436	IO	|	|	|	|	1.91
44.000	0.00	0.39	0.433	IO	|	|	|	|	1.90
44.083	0.00	0.39	0.430	IO	|	|	|	|	1.89
44.167	0.00	0.39	0.428	IO	|	|	|	|	1.88
44.250	0.00	0.39	0.425	IO	|	|	|	|	1.87
44.333	0.00	0.39	0.422	IO	|	|	|	|	1.86
44.417	0.00	0.39	0.420	IO	|	|	|	|	1.85
44.500	0.00	0.39	0.417	IO	|	|	|	|	1.84
44.583	0.00	0.39	0.414	IO	|	|	|	|	1.83
44.667	0.00	0.39	0.411	IO	|	|	|	|	1.82
44.750	0.00	0.39	0.409	IO	|	|	|	|	1.81
44.833	0.00	0.39	0.406	IO	|	|	|	|	1.80
44.917	0.00	0.39	0.403	IO	|	|	|	|	1.78
45.000	0.00	0.39	0.401	IO	|	|	|	|	1.77
45.083	0.00	0.39	0.398	IO	|	|	|	|	1.76
45.167	0.00	0.39	0.395	IO	|	|	|	|	1.75
45.250	0.00	0.39	0.392	IO	|	|	|	|	1.74
45.333	0.00	0.39	0.390	IO	|	|	|	|	1.73
45.417	0.00	0.39	0.387	IO	|	|	|	|	1.72
45.500	0.00	0.39	0.384	IO	|	|	|	|	1.71
45.583	0.00	0.39	0.382	IO	|	|	|	|	1.70
45.667	0.00	0.39	0.379	IO	|	|	|	|	1.69
45.750	0.00	0.39	0.376	IO	|	|	|	|	1.68
45.833	0.00	0.39	0.373	IO	|	|	|	|	1.66
45.917	0.00	0.39	0.371	IO	|	|	|	|	1.65
46.000	0.00	0.39	0.368	IO	|	|	|	|	1.64
46.083	0.00	0.39	0.365	IO	|	|	|	|	1.63
46.167	0.00	0.39	0.363	IO	|	|	|	|	1.62
46.250	0.00	0.39	0.360	IO	|	|	|	|	1.61
46.333	0.00	0.39	0.357	IO	|	|	|	|	1.60
46.417	0.00	0.39	0.355	IO	|	|	|	|	1.59
46.500	0.00	0.39	0.352	IO	|	|	|	|	1.58
46.583	0.00	0.39	0.349	IO	|	|	|	|	1.57
46.667	0.00	0.39	0.346	IO	|	|	|	|	1.56
46.750	0.00	0.39	0.344	IO	|	|	|	|	1.55
46.833	0.00	0.39	0.341	IO	|	|	|	|	1.53

46.917	0.00	0.39	0.338	IO					1.52
47.000	0.00	0.39	0.336	IO					1.51
47.083	0.00	0.39	0.333	IO					1.50
47.167	0.00	0.39	0.330	IO					1.49
47.250	0.00	0.39	0.327	IO					1.48
47.333	0.00	0.39	0.325	IO					1.47
47.417	0.00	0.39	0.322	IO					1.46
47.500	0.00	0.39	0.319	IO					1.45
47.583	0.00	0.39	0.317	IO					1.44
47.667	0.00	0.39	0.314	IO					1.43
47.750	0.00	0.39	0.311	IO					1.41
47.833	0.00	0.39	0.309	IO					1.40
47.917	0.00	0.39	0.306	IO					1.39
48.000	0.00	0.39	0.303	IO					1.38
48.083	0.00	0.39	0.300	IO					1.37
48.167	0.00	0.39	0.298	IO					1.36
48.250	0.00	0.39	0.295	IO					1.35
48.333	0.00	0.39	0.292	IO					1.34
48.417	0.00	0.39	0.290	IO					1.33
48.500	0.00	0.39	0.287	IO					1.32
48.583	0.00	0.39	0.284	IO					1.31
48.667	0.00	0.39	0.281	IO					1.29
48.750	0.00	0.39	0.279	IO					1.28
48.833	0.00	0.39	0.276	IO					1.27
48.917	0.00	0.39	0.273	IO					1.26
49.000	0.00	0.39	0.271	IO					1.25
49.083	0.00	0.39	0.268	IO					1.24
49.167	0.00	0.39	0.265	IO					1.23
49.250	0.00	0.39	0.263	IO					1.22
49.333	0.00	0.39	0.260	IO					1.21
49.417	0.00	0.39	0.257	IO					1.20
49.500	0.00	0.39	0.254	IO					1.19
49.583	0.00	0.39	0.252	IO					1.18
49.667	0.00	0.39	0.249	IO					1.16
49.750	0.00	0.39	0.246	IO					1.15
49.833	0.00	0.39	0.244	IO					1.14
49.917	0.00	0.39	0.241	IO					1.13
50.000	0.00	0.39	0.238	IO					1.12
50.083	0.00	0.39	0.235	IO					1.11
50.167	0.00	0.39	0.233	IO					1.10
50.250	0.00	0.39	0.230	IO					1.09
50.333	0.00	0.39	0.227	IO					1.08
50.417	0.00	0.39	0.225	IO					1.07
50.500	0.00	0.39	0.222	IO					1.06
50.583	0.00	0.39	0.219	IO					1.04
50.667	0.00	0.39	0.216	IO					1.03
50.750	0.00	0.39	0.214	IO					1.02
50.833	0.00	0.39	0.211	IO					1.01
50.917	0.00	0.39	0.208	IO					1.00
51.000	0.00	0.39	0.206	IO					0.99
51.083	0.00	0.38	0.203	IO					0.98
51.167	0.00	0.38	0.200	IO					0.96
51.250	0.00	0.37	0.198	IO					0.95
51.333	0.00	0.37	0.195	IO					0.94
51.417	0.00	0.36	0.193	IO					0.93
51.500	0.00	0.36	0.190	IO					0.91
51.583	0.00	0.35	0.188	IO					0.90
51.667	0.00	0.35	0.185	IO					0.89
51.750	0.00	0.35	0.183	IO					0.88
51.833	0.00	0.34	0.181	IO					0.87
51.917	0.00	0.34	0.178	IO					0.86
52.000	0.00	0.33	0.176	IO					0.85
52.083	0.00	0.33	0.174	IO					0.83

52.167	0.00	0.32	0.171	IO	|	|	|	|	0.82
52.250	0.00	0.32	0.169	IO	|	|	|	|	0.81
52.333	0.00	0.32	0.167	IO	|	|	|	|	0.80
52.417	0.00	0.31	0.165	IO	|	|	|	|	0.79
52.500	0.00	0.31	0.163	IO	|	|	|	|	0.78
52.583	0.00	0.30	0.161	IO	|	|	|	|	0.77
52.667	0.00	0.30	0.159	IO	|	|	|	|	0.76
52.750	0.00	0.30	0.156	IO	|	|	|	|	0.75
52.833	0.00	0.29	0.154	IO	|	|	|	|	0.74
52.917	0.00	0.29	0.152	IO	|	|	|	|	0.73
53.000	0.00	0.28	0.150	IO	|	|	|	|	0.72
53.083	0.00	0.28	0.149	IO	|	|	|	|	0.71
53.167	0.00	0.28	0.147	IO	|	|	|	|	0.70
53.250	0.00	0.27	0.145	IO	|	|	|	|	0.70
53.333	0.00	0.27	0.143	IO	|	|	|	|	0.69
53.417	0.00	0.27	0.141	IO	|	|	|	|	0.68
53.500	0.00	0.26	0.139	IO	|	|	|	|	0.67
53.583	0.00	0.26	0.137	IO	|	|	|	|	0.66
53.667	0.00	0.26	0.136	IO	|	|	|	|	0.65
53.750	0.00	0.25	0.134	IO	|	|	|	|	0.64
53.833	0.00	0.25	0.132	IO	|	|	|	|	0.64
53.917	0.00	0.25	0.130	IO	|	|	|	|	0.63
54.000	0.00	0.24	0.129	IO	|	|	|	|	0.62
54.083	0.00	0.24	0.127	IO	|	|	|	|	0.61
54.167	0.00	0.24	0.125	IO	|	|	|	|	0.60
54.250	0.00	0.23	0.124	IO	|	|	|	|	0.60
54.333	0.00	0.23	0.122	IO	|	|	|	|	0.59
54.417	0.00	0.23	0.121	IO	|	|	|	|	0.58
54.500	0.00	0.22	0.119	IO	|	|	|	|	0.57
54.583	0.00	0.22	0.118	IO	|	|	|	|	0.57
54.667	0.00	0.22	0.116	O	|	|	|	|	0.56
54.750	0.00	0.22	0.115	O	|	|	|	|	0.55
54.833	0.00	0.21	0.113	O	|	|	|	|	0.54
54.917	0.00	0.21	0.112	O	|	|	|	|	0.54
55.000	0.00	0.21	0.110	O	|	|	|	|	0.53
55.083	0.00	0.21	0.109	O	|	|	|	|	0.52
55.167	0.00	0.20	0.107	O	|	|	|	|	0.52
55.250	0.00	0.20	0.106	O	|	|	|	|	0.51
55.333	0.00	0.20	0.105	O	|	|	|	|	0.50
55.417	0.00	0.19	0.103	O	|	|	|	|	0.50
55.500	0.00	0.19	0.102	O	|	|	|	|	0.49
55.583	0.00	0.19	0.101	O	|	|	|	|	0.48
55.667	0.00	0.19	0.099	O	|	|	|	|	0.48
55.750	0.00	0.19	0.098	O	|	|	|	|	0.47
55.833	0.00	0.18	0.097	O	|	|	|	|	0.46
55.917	0.00	0.18	0.095	O	|	|	|	|	0.46
56.000	0.00	0.18	0.094	O	|	|	|	|	0.45
56.083	0.00	0.18	0.093	O	|	|	|	|	0.45
56.167	0.00	0.17	0.092	O	|	|	|	|	0.44
56.250	0.00	0.17	0.091	O	|	|	|	|	0.44
56.333	0.00	0.17	0.089	O	|	|	|	|	0.43
56.417	0.00	0.17	0.088	O	|	|	|	|	0.42
56.500	0.00	0.16	0.087	O	|	|	|	|	0.42
56.583	0.00	0.16	0.086	O	|	|	|	|	0.41
56.667	0.00	0.16	0.085	O	|	|	|	|	0.41
56.750	0.00	0.16	0.084	O	|	|	|	|	0.40
56.833	0.00	0.16	0.083	O	|	|	|	|	0.40
56.917	0.00	0.15	0.082	O	|	|	|	|	0.39
57.000	0.00	0.15	0.081	O	|	|	|	|	0.39
57.083	0.00	0.15	0.080	O	|	|	|	|	0.38
57.167	0.00	0.15	0.079	O	|	|	|	|	0.38
57.250	0.00	0.15	0.077	O	|	|	|	|	0.37
57.333	0.00	0.14	0.076	O	|	|	|	|	0.37

57.417	0.00	0.14	0.075	O	|	|	|	|	0.36
57.500	0.00	0.14	0.075	O	|	|	|	|	0.36
57.583	0.00	0.14	0.074	O	|	|	|	|	0.35
57.667	0.00	0.14	0.073	O	|	|	|	|	0.35
57.750	0.00	0.14	0.072	O	|	|	|	|	0.34
57.833	0.00	0.13	0.071	O	|	|	|	|	0.34
57.917	0.00	0.13	0.070	O	|	|	|	|	0.34
58.000	0.00	0.13	0.069	O	|	|	|	|	0.33
58.083	0.00	0.13	0.068	O	|	|	|	|	0.33
58.167	0.00	0.13	0.067	O	|	|	|	|	0.32
58.250	0.00	0.13	0.066	O	|	|	|	|	0.32
58.333	0.00	0.12	0.065	O	|	|	|	|	0.31
58.417	0.00	0.12	0.065	O	|	|	|	|	0.31
58.500	0.00	0.12	0.064	O	|	|	|	|	0.31
58.583	0.00	0.12	0.063	O	|	|	|	|	0.30
58.667	0.00	0.12	0.062	O	|	|	|	|	0.30
58.750	0.00	0.12	0.061	O	|	|	|	|	0.29
58.833	0.00	0.11	0.061	O	|	|	|	|	0.29
58.917	0.00	0.11	0.060	O	|	|	|	|	0.29
59.000	0.00	0.11	0.059	O	|	|	|	|	0.28
59.083	0.00	0.11	0.058	O	|	|	|	|	0.28
59.167	0.00	0.11	0.057	O	|	|	|	|	0.28
59.250	0.00	0.11	0.057	O	|	|	|	|	0.27
59.333	0.00	0.11	0.056	O	|	|	|	|	0.27
59.417	0.00	0.10	0.055	O	|	|	|	|	0.27
59.500	0.00	0.10	0.055	O	|	|	|	|	0.26
59.583	0.00	0.10	0.054	O	|	|	|	|	0.26
59.667	0.00	0.10	0.053	O	|	|	|	|	0.26
59.750	0.00	0.10	0.052	O	|	|	|	|	0.25

Remaining water in basin = 0.05 (Ac.Ft)

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****************************HYDROGRAPH DATA****************************
             Number of intervals =   717
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        6.953 (CFS)
             Total volume =       3.237 (Ac.Ft)
      Status of hydrographs being held in storage
                 Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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Process from Point/Station 38.100 to Point/Station 8.100
**** STREAM ROUTING SCS CONVEX METHOD ****

HYDROGRAPH STREAM ROUTING DATA:
Length of stream = 689.30 (Ft.)
Elevation difference = 3.45 (Ft.)
Slope of channel = 0.005005 (Vert/Horiz)
Channel type - Pipe

Pipe length = 689.30(Ft.) Elevation difference = 3.45(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow = 1.421(CFS)

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Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.421(CFS)
Normal flow depth in pipe =    6.45(In.)
Flow top width inside pipe =   11.97(In.)
Critical Depth =    0.50(Ft.)
Pipe flow velocity =      3.30(Ft/s)
Travel time through pipe =    3.48 min.


Pipe length  =   689.30(Ft.)   Elevation difference =   3.45(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     6.953(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     6.953(CFS)
Normal flow depth in pipe =   13.80(In.)
Flow top width inside pipe =   15.22(In.)
Critical Depth =    1.02(Ft.)
Pipe flow velocity =      4.78(Ft/s)
Travel time through pipe =    2.40 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7376   Travel time =   2.40 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   2.2133
       dt(routing time-step) =   1.77 (min.),   c* =   0.9482

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.7       3.5       5.2       7.0
----------------------------------------------------------------------
  0+ 5       0.0004      0.00  O         |         |         |         |
  0+10       0.0021      0.00  O         |         |         |         |
  0+15       0.0051      0.01  O         |         |         |         |
  0+20       0.0089      0.01  O         |         |         |         |
  0+25       0.0135      0.02  O         |         |         |         |
  0+30       0.0188      0.02  O         |         |         |         |
  0+35       0.0243      0.03  O         |         |         |         |
  0+40       0.0300      0.03  O         |         |         |         |
  0+45       0.0356      0.04  O         |         |         |         |
  0+50       0.0413      0.04  O         |         |         |         |
  0+55       0.0476      0.05  O         |         |         |         |
  1+ 0       0.0545      0.06  O         |         |         |         |
  1+ 5       0.0614      0.06  O         |         |         |         |
  1+10       0.0677      0.07  O         |         |         |         |
  1+15       0.0733      0.08  O         |         |         |         |
  1+20       0.0786      0.08  O         |         |         |         |
  1+25       0.0836      0.09  O         |         |         |         |
  1+30       0.0886      0.09  O         |         |         |         |
  1+35       0.0934      0.10  O         |         |         |         |
  1+40       0.0982      0.10  O         |         |         |         |
```

```
1+45       0.1030      0.10  O         |         |         |         |
1+50       0.1079      0.11  O         |         |         |         |
1+55       0.1133      0.12  O         |         |         |         |
2+ 0       0.1194      0.12  O         |         |         |         |
2+ 5       0.1256      0.13  O         |         |         |         |
2+10       0.1320      0.13  O         |         |         |         |
2+15       0.1382      0.14  O         |         |         |         |
2+20       0.1445      0.15  O         |         |         |         |
2+25       0.1506      0.15  O         |         |         |         |
2+30       0.1567      0.16  O         |         |         |         |
2+35       0.1629      0.17  O         |         |         |         |
2+40       0.1696      0.17  O         |         |         |         |
2+45       0.1769      0.18  |O        |         |         |         |
2+50       0.1845      0.19  |O        |         |         |         |
2+55       0.1920      0.20  |O        |         |         |         |
3+ 0       0.1995      0.20  |O        |         |         |         |
3+ 5       0.2069      0.21  |O        |         |         |         |
3+10       0.2143      0.22  |O        |         |         |         |
3+15       0.2215      0.22  |O        |         |         |         |
3+20       0.2287      0.23  |O        |         |         |         |
3+25       0.2357      0.24  |O        |         |         |         |
3+30       0.2427      0.25  |O        |         |         |         |
3+35       0.2495      0.25  |O        |         |         |         |
3+40       0.2563      0.26  |O        |         |         |         |
3+45       0.2630      0.27  |O        |         |         |         |
3+50       0.2698      0.27  |O        |         |         |         |
3+55       0.2772      0.28  |O        |         |         |         |
4+ 0       0.2851      0.29  |O        |         |         |         |
4+ 5       0.2933      0.30  |O        |         |         |         |
4+10       0.3014      0.30  |O        |         |         |         |
4+15       0.3095      0.31  |O        |         |         |         |
4+20       0.3177      0.32  |O        |         |         |         |
4+25       0.3265      0.33  |O        |         |         |         |
4+30       0.3358      0.34  |O        |         |         |         |
4+35       0.3453      0.35  |OI       |         |         |         |
4+40       0.3548      0.36  | O       |         |         |         |
4+45       0.3642      0.37  | O       |         |         |         |
4+50       0.3737      0.38  | O       |         |         |         |
4+55       0.3837      0.39  | O       |         |         |         |
5+ 0       0.3908      0.39  | O       |         |         |         |
5+ 5       0.3930      0.39  | O       |         |         |         |
5+10       0.3931      0.39  | O       |         |         |         |
5+15       0.3931      0.39  | O       |         |         |         |
5+20       0.3931      0.39  | O       |         |         |         |
5+25       0.3931      0.39  | O       |         |         |         |
5+30       0.3931      0.39  | O       |         |         |         |
5+35       0.3931      0.39  | O       |         |         |         |
5+40       0.3931      0.39  | O       |         |         |         |
5+45       0.3931      0.39  | O       |         |         |         |
5+50       0.3931      0.39  | O       |         |         |         |
5+55       0.3931      0.39  | O       |         |         |         |
6+ 0       0.3931      0.39  | O       |         |         |         |
6+ 5       0.3931      0.39  | O       |         |         |         |
6+10       0.3931      0.39  | O       |         |         |         |
6+15       0.3931      0.39  | O       |         |         |         |
6+20       0.3931      0.39  | O       |         |         |         |
6+25       0.3931      0.39  | O       |         |         |         |
6+30       0.3931      0.39  | O       |         |         |         |
6+35       0.3931      0.39  | O       |         |         |         |
6+40       0.3931      0.39  | O       |         |         |         |
6+45       0.3931      0.39  | O       |         |         |         |
6+50       0.3931      0.39  | O       |         |         |         |
6+55       0.3931      0.39  | O       |         |         |         |
```

7+ 0	0.3931	0.39	O				
7+ 5	0.3931	0.39	O				
7+10	0.3931	0.39	O				
7+15	0.3931	0.39	O				
7+20	0.3931	0.39	O				
7+25	0.3931	0.39	O				
7+30	0.3931	0.39	O				
7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				
8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3931	0.39	O				
8+35	0.3931	0.39	O				
8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3931	0.39	O				
10+50	0.3931	0.39	O				
10+55	0.3931	0.39	O				
11+ 0	0.3931	0.39	O				
11+ 5	0.3931	0.39	O				
11+10	0.3931	0.39	O				
11+15	0.3931	0.39	O				
11+20	0.3931	0.39	O				
11+25	0.3931	0.39	O				
11+30	0.3931	0.39	O				
11+35	0.3931	0.39	O				
11+40	0.3931	0.39	O				
11+45	0.3931	0.39	O				
11+50	0.3931	0.39	O				
11+55	0.3931	0.39	O				
12+ 0	0.3931	0.39	O				
12+ 5	0.3931	0.39	O				
12+10	0.3931	0.39	O				

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12+15       1.3330      1.93  |      O  |I        |         |         |
12+20       2.7608      3.34  |         |    O   I|         |         |
12+25       3.7746      4.10  |         |         |O I      |         |
12+30       4.3392      4.52  |         |         |   OI    |         |
12+35       4.6706      4.78  |         |         |     OI  |         |
12+40       4.9239      5.02  |         |         |       O |         |
12+45       5.1377      5.22  |         |         |        OI         |
12+50       5.3007      5.36  |         |         |         O         |
12+55       5.4381      5.49  |         |         |         |O        |
13+ 0       5.5568      5.60  |         |         |         |OI       |
13+ 5       5.7110      5.78  |         |         |         | OI      |
13+10       6.0016      6.15  |         |         |         |   OI    |
13+15       6.3615      6.51  |         |         |         |     OI  |
13+20       6.6426      6.74  |         |         |         |       O |
13+25       6.8167      6.87  |         |         |         |        O|
13+30       6.9193      6.95  |         |         |         |        OI
13+35       6.8230      6.74  |         |         |         |       IO|
13+40       6.3303      6.06  |         |         |         |   I O   |
13+45       5.6281      5.33  |         |         |         I O       |
13+50       5.0675      4.88  |         |         |       IO|         |
13+55       4.7250      4.61  |         |         |     IO  |         |
14+ 0       4.5312      4.47  |         |         |    IO   |         |
14+ 5       4.4859      4.49  |         |         |    O    |         |
14+10       4.6296      4.72  |         |         |     OI  |         |
14+15       4.8731      4.98  |         |         |       O |         |
14+20       5.0624      5.12  |         |         |        O|         |
14+25       5.1440      5.16  |         |         |        O|         |
14+30       5.1562      5.15  |         |         |        O|         |
14+35       5.1496      5.15  |         |         |        O|         |
14+40       5.1439      5.14  |         |         |        O|         |
14+45       5.1418      5.14  |         |         |        O|         |
14+50       5.1292      5.12  |         |         |        O|         |
14+55       5.0854      5.06  |         |         |        O|         |
15+ 0       5.0253      5.00  |         |         |       O |         |
15+ 5       4.9653      4.94  |         |         |       O |         |
15+10       4.8919      4.86  |         |         |      IO |         |
15+15       4.8145      4.78  |         |         |      O  |         |
15+20       4.7450      4.72  |         |         |      O  |         |
15+25       4.6669      4.63  |         |         |     O   |         |
15+30       4.5871      4.56  |         |         |     O   |         |
15+35       4.4741      4.42  |         |         |    O    |         |
15+40       4.2520      4.14  |         |         |  IO     |         |
15+45       3.9750      3.86  |         |         | O       |         |
15+50       3.7616      3.69  |         |         |O        |         |
15+55       3.6343      3.59  |         |         O         |         |
16+ 0       3.5645      3.54  |         |         O         |         |
16+ 5       3.3668      3.25  |         |       IO|         |         |
16+10       2.7993      2.50  |         |   I O   |         |         |
16+15       2.0349      1.71  |        I|O        |         |         |
16+20       1.4298      1.22  |      IO |         |         |         |
16+25       1.0584      0.94  |    IO   |         |         |         |
16+30       0.8454      0.78  |   O     |         |         |         |
16+35       0.7214      0.68  |  IO     |         |         |         |
16+40       0.6340      0.60  |  O      |         |         |         |
16+45       0.5655      0.54  |  O      |         |         |         |
16+50       0.5199      0.50  | O       |         |         |         |
16+55       0.4937      0.49  | O       |         |         |         |
17+ 0       0.4793      0.47  | O       |         |         |         |
17+ 5       0.4503      0.43  | O       |         |         |         |
17+10       0.4099      0.39  | O       |         |         |         |
17+15       0.3939      0.39  | O       |         |         |         |
17+20       0.3931      0.39  | O       |         |         |         |
17+25       0.3931      0.39  | O       |         |         |         |
```

17+30	0.3931	0.39	O				
17+35	0.3931	0.39	O				
17+40	0.3931	0.39	O				
17+45	0.3931	0.39	O				
17+50	0.3931	0.39	O				
17+55	0.3931	0.39	O				
18+ 0	0.3931	0.39	O				
18+ 5	0.3931	0.39	O				
18+10	0.3931	0.39	O				
18+15	0.3931	0.39	O				
18+20	0.3931	0.39	O				
18+25	0.3931	0.39	O				
18+30	0.3931	0.39	O				
18+35	0.3931	0.39	O				
18+40	0.3931	0.39	O				
18+45	0.3931	0.39	O				
18+50	0.3931	0.39	O				
18+55	0.3931	0.39	O				
19+ 0	0.3931	0.39	O				
19+ 5	0.3931	0.39	O				
19+10	0.3931	0.39	O				
19+15	0.3931	0.39	O				
19+20	0.3931	0.39	O				
19+25	0.3931	0.39	O				
19+30	0.4422	0.47	O				
19+35	0.5070	0.53	OI				
19+40	0.5281	0.53	O				
19+45	0.5141	0.51	O				
19+50	0.4865	0.47	O				
19+55	0.4436	0.42	O				
20+ 0	0.4058	0.39	O				
20+ 5	0.3937	0.39	O				
20+10	0.3931	0.39	O				
20+15	0.3931	0.39	O				
20+20	0.4065	0.42	O				
20+25	0.4295	0.44	O				
20+30	0.4466	0.45	O				
20+35	0.4558	0.46	O				
20+40	0.4603	0.46	O				
20+45	0.4625	0.46	O				
20+50	0.4548	0.45	O				
20+55	0.4256	0.41	O				
21+ 0	0.4005	0.39	O				
21+ 5	0.3934	0.39	O				
21+10	0.3931	0.39	O				
21+15	0.3931	0.39	O				
21+20	0.3937	0.39	O				
21+25	0.3935	0.39	O				
21+30	0.3931	0.39	O				
21+35	0.3931	0.39	O				
21+40	0.3931	0.39	O				
21+45	0.3931	0.39	O				
21+50	0.3931	0.39	O				
21+55	0.3931	0.39	O				
22+ 0	0.3931	0.39	O				
22+ 5	0.3931	0.39	O				
22+10	0.3931	0.39	O				
22+15	0.3931	0.39	O				
22+20	0.3931	0.39	O				
22+25	0.3931	0.39	O				
22+30	0.3931	0.39	O				
22+35	0.3931	0.39	O				
22+40	0.3931	0.39	O				

22+45	0.3931	0.39	O				
22+50	0.3931	0.39	O				
22+55	0.3931	0.39	O				
23+ 0	0.3931	0.39	O				
23+ 5	0.3931	0.39	O				
23+10	0.3931	0.39	O				
23+15	0.3931	0.39	O				
23+20	0.3931	0.39	O				
23+25	0.3931	0.39	O				
23+30	0.3931	0.39	O				
23+35	0.3931	0.39	O				
23+40	0.3931	0.39	O				
23+45	0.3931	0.39	O				
23+50	0.3931	0.39	O				
23+55	0.3931	0.39	O				
24+ 0	0.3931	0.39	O				
24+ 5	0.3931	0.39	O				
24+10	0.3931	0.39	O				
24+15	0.3931	0.39	O				
24+20	0.3931	0.39	O				
24+25	0.3931	0.39	O				
24+30	0.3931	0.39	O				
24+35	0.3931	0.39	O				
24+40	0.3931	0.39	O				
24+45	0.3931	0.39	O				
24+50	0.3931	0.39	O				
24+55	0.3931	0.39	O				
25+ 0	0.3931	0.39	O				
25+ 5	0.3931	0.39	O				
25+10	0.3931	0.39	O				
25+15	0.3931	0.39	O				
25+20	0.3931	0.39	O				
25+25	0.3931	0.39	O				
25+30	0.3931	0.39	O				
25+35	0.3931	0.39	O				
25+40	0.3931	0.39	O				
25+45	0.3931	0.39	O				
25+50	0.3931	0.39	O				
25+55	0.3931	0.39	O				
26+ 0	0.3931	0.39	O				
26+ 5	0.3931	0.39	O				
26+10	0.3931	0.39	O				
26+15	0.3931	0.39	O				
26+20	0.3931	0.39	O				
26+25	0.3931	0.39	O				
26+30	0.3931	0.39	O				
26+35	0.3931	0.39	O				
26+40	0.3931	0.39	O				
26+45	0.3931	0.39	O				
26+50	0.3931	0.39	O				
26+55	0.3931	0.39	O				
27+ 0	0.3931	0.39	O				
27+ 5	0.3931	0.39	O				
27+10	0.3931	0.39	O				
27+15	0.3931	0.39	O				
27+20	0.3931	0.39	O				
27+25	0.3931	0.39	O				
27+30	0.3931	0.39	O				
27+35	0.3931	0.39	O				
27+40	0.3931	0.39	O				
27+45	0.3931	0.39	O				
27+50	0.3931	0.39	O				
27+55	0.3931	0.39	O				

28+ 0	0.3931	0.39	O				
28+ 5	0.3931	0.39	O				
28+10	0.3931	0.39	O				
28+15	0.3931	0.39	O				
28+20	0.3931	0.39	O				
28+25	0.3931	0.39	O				
28+30	0.3931	0.39	O				
28+35	0.3931	0.39	O				
28+40	0.3931	0.39	O				
28+45	0.3931	0.39	O				
28+50	0.3931	0.39	O				
28+55	0.3931	0.39	O				
29+ 0	0.3931	0.39	O				
29+ 5	0.3931	0.39	O				
29+10	0.3931	0.39	O				
29+15	0.3931	0.39	O				
29+20	0.3931	0.39	O				
29+25	0.3931	0.39	O				
29+30	0.3931	0.39	O				
29+35	0.3931	0.39	O				
29+40	0.3931	0.39	O				
29+45	0.3931	0.39	O				
29+50	0.3931	0.39	O				
29+55	0.3931	0.39	O				
30+ 0	0.3931	0.39	O				
30+ 5	0.3931	0.39	O				
30+10	0.3931	0.39	O				
30+15	0.3931	0.39	O				
30+20	0.3931	0.39	O				
30+25	0.3931	0.39	O				
30+30	0.3931	0.39	O				
30+35	0.3931	0.39	O				
30+40	0.3931	0.39	O				
30+45	0.3931	0.39	O				
30+50	0.3931	0.39	O				
30+55	0.3931	0.39	O				
31+ 0	0.3931	0.39	O				
31+ 5	0.3931	0.39	O				
31+10	0.3931	0.39	O				
31+15	0.3931	0.39	O				
31+20	0.3931	0.39	O				
31+25	0.3931	0.39	O				
31+30	0.3931	0.39	O				
31+35	0.3931	0.39	O				
31+40	0.3931	0.39	O				
31+45	0.3931	0.39	O				
31+50	0.3931	0.39	O				
31+55	0.3931	0.39	O				
32+ 0	0.3931	0.39	O				
32+ 5	0.3931	0.39	O				
32+10	0.3931	0.39	O				
32+15	0.3931	0.39	O				
32+20	0.3931	0.39	O				
32+25	0.3931	0.39	O				
32+30	0.3931	0.39	O				
32+35	0.3931	0.39	O				
32+40	0.3931	0.39	O				
32+45	0.3931	0.39	O				
32+50	0.3931	0.39	O				
32+55	0.3931	0.39	O				
33+ 0	0.3931	0.39	O				
33+ 5	0.3931	0.39	O				
33+10	0.3931	0.39	O				

33+15	0.3931	0.39	O				
33+20	0.3931	0.39	O				
33+25	0.3931	0.39	O				
33+30	0.3931	0.39	O				
33+35	0.3931	0.39	O				
33+40	0.3931	0.39	O				
33+45	0.3931	0.39	O				
33+50	0.3931	0.39	O				
33+55	0.3931	0.39	O				
34+ 0	0.3931	0.39	O				
34+ 5	0.3931	0.39	O				
34+10	0.3931	0.39	O				
34+15	0.3931	0.39	O				
34+20	0.3931	0.39	O				
34+25	0.3931	0.39	O				
34+30	0.3931	0.39	O				
34+35	0.3931	0.39	O				
34+40	0.3931	0.39	O				
34+45	0.3931	0.39	O				
34+50	0.3931	0.39	O				
34+55	0.3931	0.39	O				
35+ 0	0.3931	0.39	O				
35+ 5	0.3931	0.39	O				
35+10	0.3931	0.39	O				
35+15	0.3931	0.39	O				
35+20	0.3931	0.39	O				
35+25	0.3931	0.39	O				
35+30	0.3931	0.39	O				
35+35	0.3931	0.39	O				
35+40	0.3931	0.39	O				
35+45	0.3931	0.39	O				
35+50	0.3931	0.39	O				
35+55	0.3931	0.39	O				
36+ 0	0.3931	0.39	O				
36+ 5	0.3931	0.39	O				
36+10	0.3931	0.39	O				
36+15	0.3931	0.39	O				
36+20	0.3931	0.39	O				
36+25	0.3931	0.39	O				
36+30	0.3931	0.39	O				
36+35	0.3931	0.39	O				
36+40	0.3931	0.39	O				
36+45	0.3931	0.39	O				
36+50	0.3931	0.39	O				
36+55	0.3931	0.39	O				
37+ 0	0.3931	0.39	O				
37+ 5	0.3931	0.39	O				
37+10	0.3931	0.39	O				
37+15	0.3931	0.39	O				
37+20	0.3931	0.39	O				
37+25	0.3931	0.39	O				
37+30	0.3931	0.39	O				
37+35	0.3931	0.39	O				
37+40	0.3931	0.39	O				
37+45	0.3931	0.39	O				
37+50	0.3931	0.39	O				
37+55	0.3931	0.39	O				
38+ 0	0.3931	0.39	O				
38+ 5	0.3931	0.39	O				
38+10	0.3931	0.39	O				
38+15	0.3931	0.39	O				
38+20	0.3931	0.39	O				
38+25	0.3931	0.39	O				

38+30	0.3931	0.39	O				
38+35	0.3931	0.39	O				
38+40	0.3931	0.39	O				
38+45	0.3931	0.39	O				
38+50	0.3931	0.39	O				
38+55	0.3931	0.39	O				
39+ 0	0.3931	0.39	O				
39+ 5	0.3931	0.39	O				
39+10	0.3931	0.39	O				
39+15	0.3931	0.39	O				
39+20	0.3931	0.39	O				
39+25	0.3931	0.39	O				
39+30	0.3931	0.39	O				
39+35	0.3931	0.39	O				
39+40	0.3931	0.39	O				
39+45	0.3931	0.39	O				
39+50	0.3931	0.39	O				
39+55	0.3931	0.39	O				
40+ 0	0.3931	0.39	O				
40+ 5	0.3931	0.39	O				
40+10	0.3931	0.39	O				
40+15	0.3931	0.39	O				
40+20	0.3931	0.39	O				
40+25	0.3931	0.39	O				
40+30	0.3931	0.39	O				
40+35	0.3931	0.39	O				
40+40	0.3931	0.39	O				
40+45	0.3931	0.39	O				
40+50	0.3931	0.39	O				
40+55	0.3931	0.39	O				
41+ 0	0.3931	0.39	O				
41+ 5	0.3931	0.39	O				
41+10	0.3931	0.39	O				
41+15	0.3931	0.39	O				
41+20	0.3931	0.39	O				
41+25	0.3931	0.39	O				
41+30	0.3931	0.39	O				
41+35	0.3931	0.39	O				
41+40	0.3931	0.39	O				
41+45	0.3931	0.39	O				
41+50	0.3931	0.39	O				
41+55	0.3931	0.39	O				
42+ 0	0.3931	0.39	O				
42+ 5	0.3931	0.39	O				
42+10	0.3931	0.39	O				
42+15	0.3931	0.39	O				
42+20	0.3931	0.39	O				
42+25	0.3931	0.39	O				
42+30	0.3931	0.39	O				
42+35	0.3931	0.39	O				
42+40	0.3931	0.39	O				
42+45	0.3931	0.39	O				
42+50	0.3931	0.39	O				
42+55	0.3931	0.39	O				
43+ 0	0.3931	0.39	O				
43+ 5	0.3931	0.39	O				
43+10	0.3931	0.39	O				
43+15	0.3931	0.39	O				
43+20	0.3931	0.39	O				
43+25	0.3931	0.39	O				
43+30	0.3931	0.39	O				
43+35	0.3931	0.39	O				
43+40	0.3931	0.39	O				

43+45	0.3931	0.39	O				
43+50	0.3931	0.39	O				
43+55	0.3931	0.39	O				
44+ 0	0.3931	0.39	O				
44+ 5	0.3931	0.39	O				
44+10	0.3931	0.39	O				
44+15	0.3931	0.39	O				
44+20	0.3931	0.39	O				
44+25	0.3931	0.39	O				
44+30	0.3931	0.39	O				
44+35	0.3931	0.39	O				
44+40	0.3931	0.39	O				
44+45	0.3931	0.39	O				
44+50	0.3931	0.39	O				
44+55	0.3931	0.39	O				
45+ 0	0.3931	0.39	O				
45+ 5	0.3931	0.39	O				
45+10	0.3931	0.39	O				
45+15	0.3931	0.39	O				
45+20	0.3931	0.39	O				
45+25	0.3931	0.39	O				
45+30	0.3931	0.39	O				
45+35	0.3931	0.39	O				
45+40	0.3931	0.39	O				
45+45	0.3931	0.39	O				
45+50	0.3931	0.39	O				
45+55	0.3931	0.39	O				
46+ 0	0.3931	0.39	O				
46+ 5	0.3931	0.39	O				
46+10	0.3931	0.39	O				
46+15	0.3931	0.39	O				
46+20	0.3931	0.39	O				
46+25	0.3931	0.39	O				
46+30	0.3931	0.39	O				
46+35	0.3931	0.39	O				
46+40	0.3931	0.39	O				
46+45	0.3931	0.39	O				
46+50	0.3931	0.39	O				
46+55	0.3931	0.39	O				
47+ 0	0.3931	0.39	O				
47+ 5	0.3931	0.39	O				
47+10	0.3931	0.39	O				
47+15	0.3931	0.39	O				
47+20	0.3931	0.39	O				
47+25	0.3931	0.39	O				
47+30	0.3931	0.39	O				
47+35	0.3931	0.39	O				
47+40	0.3931	0.39	O				
47+45	0.3931	0.39	O				
47+50	0.3931	0.39	O				
47+55	0.3931	0.39	O				
48+ 0	0.3931	0.39	O				
48+ 5	0.3931	0.39	O				
48+10	0.3931	0.39	O				
48+15	0.3931	0.39	O				
48+20	0.3931	0.39	O				
48+25	0.3931	0.39	O				
48+30	0.3931	0.39	O				
48+35	0.3931	0.39	O				
48+40	0.3931	0.39	O				
48+45	0.3931	0.39	O				
48+50	0.3931	0.39	O				
48+55	0.3931	0.39	O				

49+ 0	0.3931	0.39	| O	|	|	|	|
49+ 5	0.3931	0.39	| O	|	|	|	|
49+10	0.3931	0.39	| O	|	|	|	|
49+15	0.3931	0.39	| O	|	|	|	|
49+20	0.3931	0.39	| O	|	|	|	|
49+25	0.3931	0.39	| O	|	|	|	|
49+30	0.3931	0.39	| O	|	|	|	|
49+35	0.3931	0.39	| O	|	|	|	|
49+40	0.3931	0.39	| O	|	|	|	|
49+45	0.3931	0.39	| O	|	|	|	|
49+50	0.3931	0.39	| O	|	|	|	|
49+55	0.3931	0.39	| O	|	|	|	|
50+ 0	0.3931	0.39	| O	|	|	|	|
50+ 5	0.3931	0.39	| O	|	|	|	|
50+10	0.3931	0.39	| O	|	|	|	|
50+15	0.3931	0.39	| O	|	|	|	|
50+20	0.3931	0.39	| O	|	|	|	|
50+25	0.3931	0.39	| O	|	|	|	|
50+30	0.3931	0.39	| O	|	|	|	|
50+35	0.3931	0.39	| O	|	|	|	|
50+40	0.3931	0.39	| O	|	|	|	|
50+45	0.3931	0.39	| O	|	|	|	|
50+50	0.3931	0.39	| O	|	|	|	|
50+55	0.3931	0.39	| O	|	|	|	|
51+ 0	0.3904	0.39	| O	|	|	|	|
51+ 5	0.3857	0.38	| O	|	|	|	|
51+10	0.3807	0.38	| O	|	|	|	|
51+15	0.3758	0.37	| O	|	|	|	|
51+20	0.3709	0.37	| O	|	|	|	|
51+25	0.3661	0.36	| O	|	|	|	|
51+30	0.3614	0.36	| O	|	|	|	|
51+35	0.3567	0.35	| O	|	|	|	|
51+40	0.3521	0.35	| O	|	|	|	|
51+45	0.3476	0.35	|O	|	|	|	|
51+50	0.3431	0.34	|O	|	|	|	|
51+55	0.3386	0.34	|O	|	|	|	|
52+ 0	0.3342	0.33	|O	|	|	|	|
52+ 5	0.3299	0.33	|O	|	|	|	|
52+10	0.3257	0.32	|O	|	|	|	|
52+15	0.3214	0.32	|O	|	|	|	|
52+20	0.3173	0.32	|O	|	|	|	|
52+25	0.3132	0.31	|O	|	|	|	|
52+30	0.3091	0.31	|O	|	|	|	|
52+35	0.3051	0.30	|O	|	|	|	|
52+40	0.3012	0.30	|O	|	|	|	|
52+45	0.2973	0.30	|O	|	|	|	|
52+50	0.2935	0.29	|O	|	|	|	|
52+55	0.2897	0.29	|O	|	|	|	|
53+ 0	0.2859	0.28	|O	|	|	|	|
53+ 5	0.2822	0.28	|O	|	|	|	|
53+10	0.2786	0.28	|O	|	|	|	|
53+15	0.2750	0.27	|O	|	|	|	|
53+20	0.2714	0.27	|O	|	|	|	|
53+25	0.2679	0.27	|O	|	|	|	|
53+30	0.2644	0.26	|O	|	|	|	|
53+35	0.2610	0.26	|O	|	|	|	|
53+40	0.2576	0.26	|O	|	|	|	|
53+45	0.2543	0.25	|O	|	|	|	|
53+50	0.2510	0.25	|O	|	|	|	|
53+55	0.2478	0.25	|O	|	|	|	|
54+ 0	0.2446	0.24	|O	|	|	|	|
54+ 5	0.2414	0.24	|O	|	|	|	|
54+10	0.2383	0.24	|O	|	|	|	|

54+15	0.2352	0.23	|O	|	|	|	|
54+20	0.2322	0.23	|O	|	|	|	|
54+25	0.2292	0.23	|O	|	|	|	|
54+30	0.2262	0.22	|O	|	|	|	|
54+35	0.2233	0.22	|O	|	|	|	|
54+40	0.2204	0.22	|O	|	|	|	|
54+45	0.2175	0.22	|O	|	|	|	|
54+50	0.2147	0.21	|O	|	|	|	|
54+55	0.2120	0.21	|O	|	|	|	|
55+ 0	0.2092	0.21	|O	|	|	|	|
55+ 5	0.2065	0.21	|O	|	|	|	|
55+10	0.2038	0.20	|O	|	|	|	|
55+15	0.2012	0.20	|O	|	|	|	|
55+20	0.1986	0.20	|O	|	|	|	|
55+25	0.1960	0.19	|O	|	|	|	|
55+30	0.1935	0.19	|O	|	|	|	|
55+35	0.1910	0.19	|O	|	|	|	|
55+40	0.1885	0.19	|O	|	|	|	|
55+45	0.1861	0.19	|O	|	|	|	|
55+50	0.1837	0.18	|O	|	|	|	|
55+55	0.1813	0.18	|O	|	|	|	|
56+ 0	0.1790	0.18	|O	|	|	|	|
56+ 5	0.1766	0.18	|O	|	|	|	|
56+10	0.1744	0.17	IO	|	|	|	|
56+15	0.1721	0.17	O	|	|	|	|
56+20	0.1699	0.17	O	|	|	|	|
56+25	0.1677	0.17	O	|	|	|	|
56+30	0.1655	0.16	O	|	|	|	|
56+35	0.1634	0.16	O	|	|	|	|
56+40	0.1613	0.16	O	|	|	|	|
56+45	0.1592	0.16	O	|	|	|	|
56+50	0.1571	0.16	O	|	|	|	|
56+55	0.1551	0.15	O	|	|	|	|
57+ 0	0.1531	0.15	O	|	|	|	|
57+ 5	0.1511	0.15	O	|	|	|	|
57+10	0.1491	0.15	O	|	|	|	|
57+15	0.1472	0.15	O	|	|	|	|
57+20	0.1453	0.14	O	|	|	|	|
57+25	0.1434	0.14	O	|	|	|	|
57+30	0.1416	0.14	O	|	|	|	|
57+35	0.1398	0.14	O	|	|	|	|
57+40	0.1379	0.14	O	|	|	|	|
57+45	0.1362	0.14	O	|	|	|	|
57+50	0.1344	0.13	O	|	|	|	|
57+55	0.1327	0.13	O	|	|	|	|
58+ 0	0.1309	0.13	O	|	|	|	|
58+ 5	0.1293	0.13	O	|	|	|	|
58+10	0.1276	0.13	O	|	|	|	|
58+15	0.1259	0.13	O	|	|	|	|
58+20	0.1243	0.12	O	|	|	|	|
58+25	0.1227	0.12	O	|	|	|	|
58+30	0.1211	0.12	O	|	|	|	|
58+35	0.1195	0.12	O	|	|	|	|
58+40	0.1180	0.12	O	|	|	|	|
58+45	0.1165	0.12	O	|	|	|	|
58+50	0.1150	0.11	O	|	|	|	|
58+55	0.1135	0.11	O	|	|	|	|
59+ 0	0.1120	0.11	O	|	|	|	|
59+ 5	0.1106	0.11	O	|	|	|	|
59+10	0.1091	0.11	O	|	|	|	|
59+15	0.1077	0.11	O	|	|	|	|
59+20	0.1063	0.11	O	|	|	|	|
59+25	0.1050	0.10	O	|	|	|	|

```
   59+30       0.1036      0.10  O         |         |         |         |
   59+35       0.1023      0.10  O         |         |         |         |
   59+40       0.1009      0.10  O         |         |         |         |
   59+45       0.0996      0.10  O         |         |         |         |
   59+50       0.0385      0.00  O         |         |         |         |
   59+55       0.0020      0.00  O         |         |         |         |
   60+ 0       0.0000      0.00  O         |         |         |         |
-----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   720
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        6.919 (CFS)
                  Total volume =       3.237 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station       38.100 to Point/Station        8.100
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      _____________________________________________________________________
      Current stream hydrograph saved in file 27259PONDA1024.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------
```

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/09/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA B (Pond B)- Q10yr1hr(ONSITE)- Unit Hydrograph Method

--------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHB110.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    15
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        2.093 (CFS)
             Total volume =       0.066 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      201.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.48(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.48(Ft.)    Capacity =   0.06(CFS)
```

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 7.48(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 7.48(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 2.40(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.48(Ft.) Capacity = 25.07(CFS)

Total outflow at this depth = 25.14(CFS)

Total number of inflow hydrograph intervals = 15
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.029	0.064	0.029	0.029
6.480	0.149	0.064	0.149	0.149
7.480	0.198	25.138	0.111	0.285

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.5	1.05	1.57	2.09	Depth (Ft.)
0.083	0.16	0.00	0.001	O I	|	|	|	|	0.02
0.167	0.34	0.00	0.002	O I	|	|	|	|	0.08
0.250	0.41	0.01	0.005	O I	|	|	|	|	0.16
0.333	0.45	0.02	0.008	O I	|	|	|	|	0.26
0.417	0.50	0.02	0.011	O I	|	|	|	|	0.37
0.500	0.54	0.03	0.014	O I	|	|	|	|	0.49
0.583	0.61	0.04	0.018	O I	|	|	|	|	0.62
0.667	0.74	0.05	0.022	O I	|	|	|	|	0.77
0.750	1.05	0.06	0.028	O I	|	|	|	|	0.97
0.833	2.09	0.06	0.038	O I	|	|	|	|	1.43
0.917	1.64	0.06	0.051	O I	|	|	|	|	2.00
1.000	0.70	0.06	0.058	O I	|	|	|	|	2.34
1.083	0.24	0.06	0.061	O I	|	|	|	|	2.47
1.167	0.04	0.06	0.062	O I	|	|	|	|	2.50
1.250	0.01	0.06	0.061	O I	|	|	|	|	2.48
1.333	0.00	0.06	0.061	O I	|	|	|	|	2.46

```
Remaining water in basin =    0.06 (Ac.Ft)


****************************HYDROGRAPH DATA****************************
             Number of intervals =    16
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.064 (CFS)
             Total volume =       0.005 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.100 to Point/Station      602.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =    543.00 (Ft.)
Elevation difference =    2.70 (Ft.)
Slope of channel =  0.004972 (Vert/Horiz)
Channel type - Pipe


Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.043(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.043(CFS)
Normal flow depth in pipe =    1.86(In.)
Flow top width inside pipe =    2.91(In.)
Critical Depth =    0.12(Ft.)
Pipe flow velocity =      1.38(Ft/s)
Travel time through pipe =    6.58 min.


Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.064(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.064(CFS)
Normal flow depth in pipe =    1.65(In.)
Flow top width inside pipe =    5.35(In.)
Critical Depth =    0.12(Ft.)
Pipe flow velocity =      1.49(Ft/s)
Travel time through pipe =    6.08 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.4667   Travel time =   6.08 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.5075
       dt(routing time-step) =   2.84 (min.),   c* =   0.6124
```

```
Output hydrograph delayed by 0  unit time increments

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T   O F   S T O R M
                  R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
              Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
 Time(h+m) Out = O(CFS) In = I  0        0.0       0.0       0.0       0.1
 ---------------------------------------------------------------------
   0+ 5       0.0003      0.00  O         |         |         |         |
   0+10       0.0018      0.00  |O I      |         |         |         |
   0+15       0.0052      0.01  |  O  I   |         |         |         |
   0+20       0.0102      0.02  |     O   I         |         |         |
   0+25       0.0162      0.02  |         O   I     |         |         |
   0+30       0.0229      0.03  |         |   O    I|         |         |
   0+35       0.0303      0.04  |         |       O |   I     |         |
   0+40       0.0386      0.05  |         |         |   O     I         |
   0+45       0.0486      0.06  |         |         |         O       I |
   0+50       0.0575      0.06  |         |         |         |    O    I
   0+55       0.0617      0.06  |         |         |         |       O I
   1+ 0       0.0633      0.06  |         |         |         |        OI
   1+ 5       0.0639      0.06  |         |         |         |        OI
   1+10       0.0642      0.06  |         |         |         |        OI
   1+15       0.0643      0.06  |         |         |         |        OI
   1+20       0.0643      0.06  |         |         |         |        OI
   1+25       0.0473      0.00  I         |         |        O|         |
   1+30       0.0183      0.00  I         |O        |         |         |
   1+35       0.0071      0.00  I   O     |         |         |         |
   1+40       0.0028      0.00  IO        |         |         |         |
   1+45       0.0011      0.00  O         |         |         |         |
   1+50       0.0000      0.00  O         |         |         |         |
-----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA***************************
                  Number of intervals =    22
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.064 (CFS)
                  Total volume =       0.005 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      201.100 to Point/Station      602.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ____________________________________________________________________
      Current stream hydrograph saved in file 27259BPOND101.rte
      ****************************HYDROGRAPH DATA***************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/09/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA B (Pond B)- Q10yr3hr(ONSITE)- Unit Hydrograph Method

---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHB310.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    39
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        1.149 (CFS)
             Total volume =       0.097 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      201.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.48(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.48(Ft.)    Capacity =   0.06(CFS)
```

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 7.48(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 7.48(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 2.40(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.48(Ft.) Capacity = 25.07(CFS)

Total outflow at this depth = 25.14(CFS)

Total number of inflow hydrograph intervals = 39
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.029	0.064	0.029	0.029
6.480	0.149	0.064	0.149	0.149
7.480	0.198	25.138	0.111	0.285

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 0.3 0.57 0.86 1.15	Depth (Ft.)
0.083	0.08	0.00	0.000	O I | | | |	0.01
0.167	0.15	0.00	0.001	O I | | | |	0.04
0.250	0.14	0.00	0.002	O I | | | |	0.07
0.333	0.17	0.01	0.003	O I | | | |	0.11
0.417	0.19	0.01	0.004	O I | | | |	0.15
0.500	0.22	0.01	0.006	O I | | | |	0.19
0.583	0.21	0.02	0.007	O I | | | |	0.24
0.667	0.22	0.02	0.008	O I | | | |	0.29
0.750	0.24	0.02	0.010	O I | | | |	0.34
0.833	0.21	0.02	0.011	O I | | | |	0.38
0.917	0.20	0.03	0.012	O I | | | |	0.43
1.000	0.22	0.03	0.014	O I | | | |	0.47
1.083	0.27	0.03	0.015	O I| | | |	0.52
1.167	0.30	0.04	0.017	|O I | | |	0.58
1.250	0.30	0.04	0.019	|O I | | |	0.64
1.333	0.29	0.05	0.020	|O I| | | |	0.70
1.417	0.32	0.05	0.022	|O I | | |	0.76
1.500	0.36	0.05	0.024	|O | I | | |	0.83

```
1.583    0.35    0.06      0.026  |O      |I      |       |       |     0.90
1.667    0.36    0.06      0.028  |O      | I     |       |       |     0.97
1.750    0.42    0.06      0.031  |O      |  I    |       |       |     1.07
1.833    0.45    0.06      0.033  |O      |   I   |       |       |     1.19
1.917    0.43    0.06      0.036  |O      |  I    |       |       |     1.30
2.000    0.42    0.06      0.038  |O      |  I    |       |       |     1.42
2.083    0.43    0.06      0.041  |O      |   I   |       |       |     1.53
2.167    0.53    0.06      0.043  |O      |     I |       |       |     1.66
2.250    0.66    0.06      0.047  |O      |       | I     |       |     1.83
2.333    0.60    0.06      0.051  |O      |       I       |       |     2.01
2.417    0.79    0.06      0.055  |O      |       |    I  |       |     2.20
2.500    1.02    0.06      0.061  |O      |       |       |   I   |     2.47
2.583    1.15    0.06      0.068  |O      |       |       |       I     2.79
2.667    1.03    0.06      0.075  |O      |       |       |   I   |     3.11
2.750    0.59    0.06      0.080  |O      |       I       |       |     3.35
2.833    0.31    0.06      0.083  |O      I       |       |       |     3.47
2.917    0.25    0.06      0.085  |O     I|       |       |       |     3.54
3.000    0.14    0.06      0.085  |O I    |       |       |       |     3.58
3.083    0.04    0.06      0.086  |O      |       |       |       |     3.59
3.167    0.01    0.06      0.085  IO      |       |       |       |     3.57
3.250    0.00    0.06      0.085  IO      |       |       |       |     3.56
3.333    0.00    0.06      0.085  IO      |       |       |       |     3.54
```

Remaining water in basin = 0.08 (Ac.Ft)

```
****************************HYDROGRAPH DATA****************************
              Number of intervals =    40
              Time interval =    5.0 (Min.)
              Maximum/Peak flow rate =        0.064 (CFS)
              Total volume =       0.013 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
***********************************************************************

----------------------------------------------------------------------
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.100 to Point/Station      602.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =    543.00 (Ft.)
Elevation difference =    2.70 (Ft.)
Slope of channel =  0.004972 (Vert/Horiz)
Channel type - Pipe


Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.046(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.046(CFS)
Normal flow depth in pipe =    1.90(In.)
Flow top width inside pipe =    2.89(In.)
Critical Depth =    0.13(Ft.)
Pipe flow velocity =      1.39(Ft/s)
Travel time through pipe =    6.53 min.
```

```
Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.064(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.064(CFS)
Normal flow depth in pipe =    1.65(In.)
Flow top width inside pipe =    5.35(In.)
Critical Depth =    0.12(Ft.)
Pipe flow velocity =      1.49(Ft/s)
Travel time through pipe =    6.08 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.4667   Travel time =   6.08 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.5075
       dt(routing time-step) =   2.84 (min.),   c* =   0.6124

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

--------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.0       0.0       0.0       0.1
--------------------------------------------------------------------
  0+ 5       0.0002      0.00  O         |         |         |         |
  0+10       0.0009      0.00  OI        |         |         |         |
  0+15       0.0024      0.00  |OI       |         |         |         |
  0+20       0.0043      0.01  | O I     |         |         |         |
  0+25       0.0065      0.01  |   OI    |         |         |         |
  0+30       0.0091      0.01  |    O I  |         |         |         |
  0+35       0.0119      0.02  |      O I|         |         |         |
  0+40       0.0148      0.02  |        O|I        |         |         |
  0+45       0.0179      0.02  |         |O I      |         |         |
  0+50       0.0210      0.02  |         |  O I    |         |         |
  0+55       0.0240      0.03  |         |   O  I  |         |         |
  1+ 0       0.0269      0.03  |         |     O I |         |         |
  1+ 5       0.0299      0.03  |         |       O I         |         |
  1+10       0.0332      0.04  |         |         O  I      |         |
  1+15       0.0368      0.04  |         |         | O  I    |         |
  1+20       0.0406      0.05  |         |         |    O  I |         |
  1+25       0.0444      0.05  |         |         |      O  I         |
  1+30       0.0484      0.05  |         |         |         O  I      |
  1+35       0.0528      0.06  |         |         |         | O   I   |
  1+40       0.0572      0.06  |         |         |         |    O  I |
  1+45       0.0610      0.06  |         |         |         |      O  I
  1+50       0.0630      0.06  |         |         |         |        OI
  1+55       0.0638      0.06  |         |         |         |        OI
  2+ 0       0.0641      0.06  |         |         |         |        OI
  2+ 5       0.0643      0.06  |         |         |         |        OI
  2+10       0.0643      0.06  |         |         |         |        OI
  2+15       0.0643      0.06  |         |         |         |        OI
```

```
    2+20       0.0643      0.06  |         |         |         |        OI
    2+25       0.0643      0.06  |         |         |         |        OI
    2+30       0.0643      0.06  |         |         |         |        OI
    2+35       0.0643      0.06  |         |         |         |        OI
    2+40       0.0643      0.06  |         |         |         |        OI
    2+45       0.0643      0.06  |         |         |         |        OI
    2+50       0.0643      0.06  |         |         |         |        OI
    2+55       0.0643      0.06  |         |         |         |        OI
    3+ 0       0.0643      0.06  |         |         |         |        OI
    3+ 5       0.0643      0.06  |         |         |         |        OI
    3+10       0.0643      0.06  |         |         |         |        OI
    3+15       0.0643      0.06  |         |         |         |        OI
    3+20       0.0643      0.06  |         |         |         |        OI
    3+25       0.0473      0.00  I         |         |        O|         |
    3+30       0.0183      0.00  I         |O        |         |         |
    3+35       0.0071      0.00  I   O     |         |         |         |
    3+40       0.0028      0.00  IO        |         |         |         |
    3+45       0.0011      0.00  O         |         |         |         |
    3+50       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    46
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.064 (CFS)
                  Total volume =       0.013 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      201.100 to Point/Station      602.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259BPOND103.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/09/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA B (Pond B)- Q10yr6hr(ONSITE)- Unit Hydrograph Method

---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHB610.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    75
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        1.135 (CFS)
             Total volume =       0.138 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      201.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.48(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.48(Ft.)    Capacity =   0.06(CFS)
```

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 7.48(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 7.48(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 2.40(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.48(Ft.) Capacity = 25.07(CFS)

Total outflow at this depth = 25.14(CFS)

Total number of inflow hydrograph intervals = 75
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.029	0.064	0.029	0.029
6.480	0.149	0.064	0.149	0.149
7.480	0.198	25.138	0.111	0.285

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.3	0.57	0.85	1.13	Depth (Ft.)
0.083	0.04	0.00	0.000	OI	|	|	|	|	0.00
0.167	0.08	0.00	0.001	O I	|	|	|	|	0.02
0.250	0.09	0.00	0.001	O I	|	|	|	|	0.04
0.333	0.10	0.00	0.002	O I	|	|	|	|	0.06
0.417	0.10	0.01	0.002	O I	|	|	|	|	0.08
0.500	0.11	0.01	0.003	O I	|	|	|	|	0.11
0.583	0.12	0.01	0.004	O I	|	|	|	|	0.13
0.667	0.12	0.01	0.005	O I	|	|	|	|	0.16
0.750	0.12	0.01	0.005	O I	|	|	|	|	0.18
0.833	0.12	0.01	0.006	O I	|	|	|	|	0.21
0.917	0.12	0.02	0.007	O I	|	|	|	|	0.23
1.000	0.13	0.02	0.008	O I	|	|	|	|	0.26
1.083	0.14	0.02	0.008	O I	|	|	|	|	0.29
1.167	0.14	0.02	0.009	O I	|	|	|	|	0.32
1.250	0.14	0.02	0.010	O I	|	|	|	|	0.35
1.333	0.14	0.02	0.011	O I	|	|	|	|	0.38
1.417	0.14	0.03	0.012	O I	|	|	|	|	0.40
1.500	0.14	0.03	0.013	O I	|	|	|	|	0.43

```
1.583    0.14    0.03      0.013  O   I   |        |        |        |      0.46
1.667    0.14    0.03      0.014  O   I   |        |        |        |      0.49
1.750    0.14    0.03      0.015  O   I   |        |        |        |      0.51
1.833    0.14    0.03      0.016  O   I   |        |        |        |      0.54
1.917    0.14    0.04      0.016  |O  I   |        |        |        |      0.57
2.000    0.16    0.04      0.017  |O  I   |        |        |        |      0.59
2.083    0.15    0.04      0.018  |O  I   |        |        |        |      0.62
2.167    0.16    0.04      0.019  |O  I   |        |        |        |      0.65
2.250    0.17    0.04      0.020  |O  I   |        |        |        |      0.67
2.333    0.17    0.05      0.020  |O  I   |        |        |        |      0.70
2.417    0.17    0.05      0.021  |O  I   |        |        |        |      0.73
2.500    0.17    0.05      0.022  |O  I   |        |        |        |      0.76
2.583    0.17    0.05      0.023  |O  I   |        |        |        |      0.79
2.667    0.17    0.05      0.024  |O  I   |        |        |        |      0.82
2.750    0.18    0.05      0.024  |O   I  |        |        |        |      0.84
2.833    0.19    0.06      0.025  |O   I  |        |        |        |      0.87
2.917    0.19    0.06      0.026  |O   I  |        |        |        |      0.91
3.000    0.19    0.06      0.027  |O   I  |        |        |        |      0.94
3.083    0.19    0.06      0.028  |O   I  |        |        |        |      0.97
3.167    0.20    0.06      0.029  |O   I  |        |        |        |      1.00
3.250    0.21    0.06      0.030  |O   I  |        |        |        |      1.04
3.333    0.21    0.06      0.031  |O   I  |        |        |        |      1.09
3.417    0.22    0.06      0.032  |O    I |        |        |        |      1.14
3.500    0.25    0.06      0.033  |O    I |        |        |        |      1.19
3.583    0.27    0.06      0.035  |O     I|        |        |        |      1.25
3.667    0.28    0.06      0.036  |O     I|        |        |        |      1.32
3.750    0.29    0.06      0.037  |O      I        |        |        |      1.39
3.833    0.30    0.06      0.039  |O      I        |        |        |      1.46
3.917    0.32    0.06      0.041  |O      I        |        |        |      1.54
4.000    0.33    0.06      0.043  |O      |I       |        |        |      1.62
4.083    0.34    0.06      0.044  |O      |I       |        |        |      1.70
4.167    0.36    0.06      0.046  |O      | I      |        |        |      1.79
4.250    0.38    0.06      0.048  |O      | I      |        |        |      1.89
4.333    0.41    0.06      0.051  |O      |  I     |        |        |      1.99
4.417    0.43    0.06      0.053  |O      |   I    |        |        |      2.10
4.500    0.44    0.06      0.056  |O      |   I    |        |        |      2.22
4.583    0.45    0.06      0.058  |O      |   I    |        |        |      2.34
4.667    0.48    0.06      0.061  |O      |    I   |        |        |      2.47
4.750    0.50    0.06      0.064  |O      |     I  |        |        |      2.60
4.833    0.51    0.06      0.067  |O      |     I  |        |        |      2.74
4.917    0.52    0.06      0.070  |O      |     I  |        |        |      2.88
5.000    0.54    0.06      0.073  |O      |      I|        |        |      3.03
5.083    0.61    0.06      0.077  |O      |       |I       |        |      3.19
5.167    0.72    0.06      0.081  |O      |       |   I    |        |      3.38
5.250    0.81    0.06      0.086  |O      |       |     I  |        |      3.60
5.333    0.88    0.06      0.091  |O      |       |       I        |      3.84
5.417    0.98    0.06      0.097  |O      |       |        |  I     |      4.12
5.500    1.13    0.06      0.104  |O      |       |        |       I      4.43
5.583    0.79    0.06      0.110  |O      |       |     I  |        |      4.71
5.667    0.35    0.06      0.114  |O      |I      |        |        |      4.87
5.750    0.17    0.06      0.115  |O  I   |       |        |        |      4.93
5.833    0.10    0.06      0.115  |OI     |       |        |        |      4.95
5.917    0.05    0.06      0.116  |O      |       |        |        |      4.95
6.000    0.02    0.06      0.115  IO      |       |        |        |      4.94
6.083    0.01    0.06      0.115  IO      |       |        |        |      4.93
6.167    0.00    0.06      0.115  IO      |       |        |        |      4.91
6.250    0.00    0.06      0.114  IO      |       |        |        |      4.89
6.333    0.00    0.06      0.114  IO      |       |        |        |      4.87
```

Remaining water in basin = 0.11 (Ac.Ft)

```
****************************HYDROGRAPH DATA****************************
             Number of intervals =    76
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.064 (CFS)
             Total volume =       0.025 (Ac.Ft)
      Status of hydrographs being held in storage
                 Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.100 to Point/Station      602.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =    543.00 (Ft.)
Elevation difference =    2.70 (Ft.)
Slope of channel =  0.004972 (Vert/Horiz)
Channel type - Pipe


Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.047(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.047(CFS)
Normal flow depth in pipe =    1.95(In.)
Flow top width inside pipe =    2.86(In.)
Critical Depth =    0.13(Ft.)
Pipe flow velocity =      1.40(Ft/s)
Travel time through pipe =    6.49 min.


Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.064(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.064(CFS)
Normal flow depth in pipe =    1.65(In.)
Flow top width inside pipe =    5.35(In.)
Critical Depth =    0.12(Ft.)
Pipe flow velocity =      1.49(Ft/s)
Travel time through pipe =    6.08 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.4667   Travel time =   6.08 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.5075
       dt(routing time-step) =   2.84 (min.),   c* =   0.6124

Output hydrograph delayed by 0  unit time increments
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P R I N T O F S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	0.0	0.0	0.0	0.1
0+ 5	0.0001	0.00	O				
0+10	0.0004	0.00	O				
0+15	0.0013	0.00	OI				
0+20	0.0024	0.00	|OI				
0+25	0.0037	0.01	| OI				
0+30	0.0051	0.01	| OI				
0+35	0.0066	0.01	| OI				
0+40	0.0082	0.01	| OI				
0+45	0.0098	0.01	| OI				
0+50	0.0115	0.01	| OI				
0+55	0.0131	0.02	| OI|				
1+ 0	0.0148	0.02	| OI				
1+ 5	0.0165	0.02	| OI				
1+10	0.0183	0.02	| |OI				
1+15	0.0202	0.02	| | OI				
1+20	0.0220	0.02	| | O I				
1+25	0.0238	0.03	| | O I				
1+30	0.0257	0.03	| | O I				
1+35	0.0275	0.03	| | OI				
1+40	0.0292	0.03	| | OI|				
1+45	0.0310	0.03	| | OI				
1+50	0.0327	0.03	| | OI				
1+55	0.0344	0.04	| | |OI				
2+ 0	0.0360	0.04	| | | OI				
2+ 5	0.0378	0.04	| | | OI				
2+10	0.0395	0.04	| | | OI				
2+15	0.0413	0.04	| | | OI				
2+20	0.0431	0.05	| | | O I				
2+25	0.0449	0.05	| | | O I|				
2+30	0.0467	0.05	| | | OI				
2+35	0.0485	0.05	| | | OI				
2+40	0.0503	0.05	| | | |OI				
2+45	0.0521	0.05	| | | | OI				
2+50	0.0540	0.06	| | | | OI				
2+55	0.0559	0.06	| | | | O I				
3+ 0	0.0579	0.06	| | | | O I				
3+ 5	0.0598	0.06	| | | | OI				
3+10	0.0618	0.06	| | | | OI|				
3+15	0.0633	0.06	| | | | OI				
3+20	0.0639	0.06	| | | | OI				
3+25	0.0642	0.06	| | | | OI				
3+30	0.0643	0.06	| | | | OI				
3+35	0.0643	0.06	| | | | OI				
3+40	0.0643	0.06	| | | | OI				
3+45	0.0643	0.06	| | | | OI				
3+50	0.0643	0.06	| | | | OI				
3+55	0.0643	0.06	| | | | OI				
4+ 0	0.0643	0.06	| | | | OI				
4+ 5	0.0643	0.06	| | | | OI				
4+10	0.0643	0.06	| | | | OI				
4+15	0.0643	0.06	| | | | OI				
4+20	0.0643	0.06	| | | | OI				
4+25	0.0643	0.06	| | | | OI				
4+30	0.0643	0.06	| | | | OI				

```
    4+35       0.0643      0.06  |         |         |         |        OI
    4+40       0.0643      0.06  |         |         |         |        OI
    4+45       0.0643      0.06  |         |         |         |        OI
    4+50       0.0643      0.06  |         |         |         |        OI
    4+55       0.0643      0.06  |         |         |         |        OI
    5+ 0       0.0643      0.06  |         |         |         |        OI
    5+ 5       0.0643      0.06  |         |         |         |        OI
    5+10       0.0643      0.06  |         |         |         |        OI
    5+15       0.0643      0.06  |         |         |         |        OI
    5+20       0.0643      0.06  |         |         |         |        OI
    5+25       0.0643      0.06  |         |         |         |        OI
    5+30       0.0643      0.06  |         |         |         |        OI
    5+35       0.0643      0.06  |         |         |         |        OI
    5+40       0.0643      0.06  |         |         |         |        OI
    5+45       0.0643      0.06  |         |         |         |        OI
    5+50       0.0643      0.06  |         |         |         |        OI
    5+55       0.0643      0.06  |         |         |         |        OI
    6+ 0       0.0643      0.06  |         |         |         |        OI
    6+ 5       0.0643      0.06  |         |         |         |        OI
    6+10       0.0643      0.06  |         |         |         |         O
    6+15       0.0643      0.06  |         |         |         |         O
    6+20       0.0643      0.06  |         |         |         |         O
    6+25       0.0473      0.00  I         |         |        O|         |
    6+30       0.0183      0.00  I         |O        |         |         |
    6+35       0.0071      0.00  I   O     |         |         |         |
    6+40       0.0028      0.00  IO        |         |         |         |
    6+45       0.0011      0.00  O         |         |         |         |
    6+50       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA***************************
                  Number of intervals =    82
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.064 (CFS)
                  Total volume =       0.025 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      201.100 to Point/Station      602.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      _____________________________________________________________________
      Current stream hydrograph saved in file 27259BPOND106.rte
      ****************************HYDROGRAPH DATA***************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/09/18

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PM #13523
MILL CREEK PROMENADE
AREA B (Pond B)- Q10yr24hr(ONSITE)- Unit Hydrograph Method

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Program License Serial Number 4066

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********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHB2410.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =   291
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.387 (CFS)
             Total volume =       0.190 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      201.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.48(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
```

Depth above pipe = 6.48(Ft.) Capacity = 0.06(CFS)

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 7.48(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 7.48(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 2.40(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.48(Ft.) Capacity = 25.07(CFS)

Total outflow at this depth = 25.14(CFS)

Total number of inflow hydrograph intervals = 291
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.029	0.064	0.029	0.029
6.480	0.149	0.064	0.149	0.149
7.480	0.198	25.138	0.111	0.285

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.1	0.19	0.29	0.39	Depth (Ft.)
0.083	0.01	0.00	0.000	O	|	|	|	|	0.00
0.167	0.02	0.00	0.000	OI	|	|	|	|	0.00
0.250	0.02	0.00	0.000	OI	|	|	|	|	0.01
0.333	0.03	0.00	0.000	O I	|	|	|	|	0.01
0.417	0.03	0.00	0.001	O I	|	|	|	|	0.02
0.500	0.03	0.00	0.001	O I	|	|	|	|	0.03
0.583	0.03	0.00	0.001	O I	|	|	|	|	0.03
0.667	0.03	0.00	0.001	O I	|	|	|	|	0.04
0.750	0.03	0.00	0.001	O I	|	|	|	|	0.05
0.833	0.04	0.00	0.002	O I	|	|	|	|	0.05
0.917	0.04	0.00	0.002	O I	|	|	|	|	0.06
1.000	0.04	0.00	0.002	O I	|	|	|	|	0.07
1.083	0.04	0.01	0.002	O I	|	|	|	|	0.08
1.167	0.03	0.01	0.002	O I	|	|	|	|	0.09
1.250	0.03	0.01	0.003	O I	|	|	|	|	0.09
1.333	0.03	0.01	0.003	O I	|	|	|	|	0.10

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1.417    0.03    0.01      0.003  O I     |       |       |       |     0.10
1.500    0.03    0.01      0.003  O I     |       |       |       |     0.11
1.583    0.03    0.01      0.003  O I     |       |       |       |     0.11
1.667    0.03    0.01      0.003  O I     |       |       |       |     0.12
1.750    0.03    0.01      0.004  O I     |       |       |       |     0.13
1.833    0.04    0.01      0.004  O I     |       |       |       |     0.13
1.917    0.04    0.01      0.004  O  I    |       |       |       |     0.14
2.000    0.04    0.01      0.004  O  I    |       |       |       |     0.15
2.083    0.04    0.01      0.004  O  I    |       |       |       |     0.15
2.167    0.04    0.01      0.005  O  I    |       |       |       |     0.16
2.250    0.04    0.01      0.005  O  I    |       |       |       |     0.17
2.333    0.04    0.01      0.005  O  I    |       |       |       |     0.17
2.417    0.04    0.01      0.005  O  I    |       |       |       |     0.18
2.500    0.04    0.01      0.005  O  I    |       |       |       |     0.19
2.583    0.05    0.01      0.006  |O I    |       |       |       |     0.20
2.667    0.05    0.01      0.006  |O  I   |       |       |       |     0.20
2.750    0.05    0.01      0.006  |O  I   |       |       |       |     0.21
2.833    0.02    0.01      0.006  |OI     |       |       |       |     0.22
2.917    0.00    0.01      0.006  IO      |       |       |       |     0.22
3.000    0.00    0.01      0.006  IO      |       |       |       |     0.22
3.083    0.00    0.01      0.006  IO      |       |       |       |     0.21
3.167    0.00    0.01      0.006  IO      |       |       |       |     0.21
3.250    0.00    0.01      0.006  IO      |       |       |       |     0.21
3.333    0.00    0.01      0.006  IO      |       |       |       |     0.20
3.417    0.00    0.01      0.006  IO      |       |       |       |     0.20
3.500    0.00    0.01      0.006  IO      |       |       |       |     0.20
3.583    0.00    0.01      0.006  IO      |       |       |       |     0.20
3.667    0.00    0.01      0.006  IO      |       |       |       |     0.19
3.750    0.00    0.01      0.006  IO      |       |       |       |     0.19
3.833    0.01    0.01      0.006  IO      |       |       |       |     0.19
3.917    0.01    0.01      0.006  |O      |       |       |       |     0.19
4.000    0.02    0.01      0.006  |O      |       |       |       |     0.19
4.083    0.02    0.01      0.006  |O      |       |       |       |     0.19
4.167    0.02    0.01      0.006  |O      |       |       |       |     0.19
4.250    0.02    0.01      0.006  |O      |       |       |       |     0.19
4.333    0.02    0.01      0.006  |O      |       |       |       |     0.20
4.417    0.03    0.01      0.006  |OI     |       |       |       |     0.20
4.500    0.03    0.01      0.006  |OI     |       |       |       |     0.20
4.583    0.03    0.01      0.006  |OI     |       |       |       |     0.21
4.667    0.03    0.01      0.006  |OI     |       |       |       |     0.21
4.750    0.03    0.01      0.006  |OI     |       |       |       |     0.21
4.833    0.04    0.01      0.006  |O I    |       |       |       |     0.22
4.917    0.04    0.01      0.007  |O I    |       |       |       |     0.22
5.000    0.04    0.01      0.007  |O I    |       |       |       |     0.23
5.083    0.03    0.02      0.007  |OI     |       |       |       |     0.24
5.167    0.02    0.02      0.007  |O      |       |       |       |     0.24
5.250    0.02    0.02      0.007  |O      |       |       |       |     0.24
5.333    0.03    0.02      0.007  |OI     |       |       |       |     0.24
5.417    0.03    0.02      0.007  |OI     |       |       |       |     0.25
5.500    0.03    0.02      0.007  |OI     |       |       |       |     0.25
5.583    0.04    0.02      0.007  |O I    |       |       |       |     0.25
5.667    0.04    0.02      0.008  |O I    |       |       |       |     0.26
5.750    0.05    0.02      0.008  |O I    |       |       |       |     0.27
5.833    0.05    0.02      0.008  |O I    |       |       |       |     0.27
5.917    0.05    0.02      0.008  |O I    |       |       |       |     0.28
6.000    0.05    0.02      0.008  |O I    |       |       |       |     0.29
6.083    0.05    0.02      0.009  |O  I   |       |       |       |     0.29
6.167    0.06    0.02      0.009  |O  I   |       |       |       |     0.30
6.250    0.06    0.02      0.009  |O  I   |       |       |       |     0.31
6.333    0.06    0.02      0.009  |O  I   |       |       |       |     0.32
6.417    0.06    0.02      0.010  |O  I   |       |       |       |     0.33
6.500    0.06    0.02      0.010  |O  I   |       |       |       |     0.34
6.583    0.07    0.02      0.010  |O   I  |       |       |       |     0.35
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 6.667    0.07    0.02      0.010  |O   I  |       |       |       |     0.36
 6.750    0.07    0.02      0.011  |O    I |       |       |       |     0.37
 6.833    0.07    0.02      0.011  | O   I |       |       |       |     0.38
 6.917    0.07    0.03      0.011  | O   I |       |       |       |     0.40
 7.000    0.07    0.03      0.012  | O   I |       |       |       |     0.41
 7.083    0.07    0.03      0.012  | O   I |       |       |       |     0.42
 7.167    0.07    0.03      0.012  | O   I |       |       |       |     0.43
 7.250    0.07    0.03      0.013  | O   I |       |       |       |     0.44
 7.333    0.08    0.03      0.013  | O   I |       |       |       |     0.45
 7.417    0.09    0.03      0.014  | O    I|       |       |       |     0.47
 7.500    0.09    0.03      0.014  | O    I|       |       |       |     0.48
 7.583    0.09    0.03      0.014  | O    I|       |       |       |     0.49
 7.667    0.10    0.03      0.015  | O     I       |       |       |     0.51
 7.750    0.10    0.03      0.015  | O     I       |       |       |     0.52
 7.833    0.11    0.03      0.016  | O     I       |       |       |     0.54
 7.917    0.11    0.04      0.016  | O     |I      |       |       |     0.56
 8.000    0.11    0.04      0.017  |  O    |I      |       |       |     0.58
 8.083    0.13    0.04      0.017  |  O    | I     |       |       |     0.60
 8.167    0.14    0.04      0.018  |  O    |  I    |       |       |     0.62
 8.250    0.14    0.04      0.019  |  O    |  I    |       |       |     0.64
 8.333    0.14    0.04      0.019  |  O    |  I    |       |       |     0.66
 8.417    0.14    0.04      0.020  |  O    |  I    |       |       |     0.69
 8.500    0.14    0.05      0.021  |  O    |  I    |       |       |     0.71
 8.583    0.15    0.05      0.021  |  O    |   I   |       |       |     0.73
 8.667    0.15    0.05      0.022  |   O   |   I   |       |       |     0.76
 8.750    0.15    0.05      0.023  |   O   |   I   |       |       |     0.78
 8.833    0.16    0.05      0.023  |   O   |    I  |       |       |     0.81
 8.917    0.16    0.05      0.024  |   O   |    I  |       |       |     0.83
 9.000    0.17    0.06      0.025  |   O   |    I  |       |       |     0.86
 9.083    0.18    0.06      0.026  |   O   |     I |       |       |     0.89
 9.167    0.19    0.06      0.027  |   O   |      I|       |       |     0.92
 9.250    0.19    0.06      0.027  |    O  |      I|       |       |     0.95
 9.333    0.20    0.06      0.028  |    O  |       I       |       |     0.98
 9.417    0.20    0.06      0.029  |    O  |       I       |       |     1.02
 9.500    0.20    0.06      0.030  |    O  |       I       |       |     1.06
 9.583    0.21    0.06      0.031  |    O  |       |I      |       |     1.10
 9.667    0.22    0.06      0.032  |    O  |       |I      |       |     1.15
 9.750    0.22    0.06      0.033  |    O  |       |I      |       |     1.20
 9.833    0.22    0.06      0.034  |    O  |       | I     |       |     1.25
 9.917    0.23    0.06      0.036  |    O  |       | I     |       |     1.30
10.000    0.23    0.06      0.037  |    O  |       |  I    |       |     1.35
10.083    0.19    0.06      0.038  |    O  |      I|       |       |     1.40
10.167    0.15    0.06      0.038  |    O  |   I   |       |       |     1.43
10.250    0.15    0.06      0.039  |    O  |   I   |       |       |     1.46
10.333    0.14    0.06      0.040  |    O  |  I    |       |       |     1.48
10.417    0.14    0.06      0.040  |    O  |  I    |       |       |     1.51
10.500    0.14    0.06      0.041  |    O  |  I    |       |       |     1.53
10.583    0.18    0.06      0.041  |    O  |     I |       |       |     1.56
10.667    0.20    0.06      0.042  |    O  |       I       |       |     1.60
10.750    0.21    0.06      0.043  |    O  |       |I      |       |     1.65
10.833    0.21    0.06      0.044  |    O  |       |I      |       |     1.69
10.917    0.21    0.06      0.045  |    O  |       |I      |       |     1.74
11.000    0.21    0.06      0.046  |    O  |       |I      |       |     1.78
11.083    0.20    0.06      0.047  |    O  |       I       |       |     1.83
11.167    0.20    0.06      0.048  |    O  |       I       |       |     1.87
11.250    0.20    0.06      0.049  |    O  |       I       |       |     1.91
11.333    0.20    0.06      0.050  |    O  |       I       |       |     1.95
11.417    0.20    0.06      0.051  |    O  |       I       |       |     1.99
11.500    0.20    0.06      0.052  |    O  |       I       |       |     2.03
11.583    0.18    0.06      0.053  |    O  |      I|       |       |     2.07
11.667    0.17    0.06      0.053  |    O  |     I |       |       |     2.11
11.750    0.17    0.06      0.054  |    O  |     I |       |       |     2.14
11.833    0.18    0.06      0.055  |    O  |     I |       |       |     2.18
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11.917    0.18    0.06      0.056  |    O  |       I|       |       |     2.22
12.000    0.19    0.06      0.056  |    O  |       I|       |       |     2.25
12.083    0.23    0.06      0.057  |    O  |        |  I    |       |     2.30
12.167    0.27    0.06      0.059  |    O  |        |    I  |       |     2.36
12.250    0.27    0.06      0.060  |    O  |        |     I |       |     2.42
12.333    0.28    0.06      0.062  |    O  |        |      I|       |     2.49
12.417    0.28    0.06      0.063  |    O  |        |      I|       |     2.56
12.500    0.29    0.06      0.065  |    O  |        |      I|       |     2.63
12.583    0.30    0.06      0.066  |    O  |        |       I       |     2.70
12.667    0.31    0.06      0.068  |    O  |        |       |I      |     2.77
12.750    0.31    0.06      0.070  |    O  |        |       |I      |     2.85
12.833    0.32    0.06      0.071  |    O  |        |       | I     |     2.93
12.917    0.32    0.06      0.073  |    O  |        |       | I     |     3.01
13.000    0.32    0.06      0.075  |    O  |        |       | I     |     3.09
13.083    0.36    0.06      0.077  |    O  |        |       |    I  |     3.18
13.167    0.38    0.06      0.079  |    O  |        |       |      I|     3.27
13.250    0.39    0.06      0.081  |    O  |        |       |      I|     3.37
13.333    0.39    0.06      0.083  |    O  |        |       |      I|     3.48
13.417    0.39    0.06      0.085  |    O  |        |       |      I|     3.58
13.500    0.39    0.06      0.088  |    O  |        |       |      I|     3.68
13.583    0.32    0.06      0.090  |    O  |        |       | I     |     3.77
13.667    0.26    0.06      0.091  |    O  |        |    I  |       |     3.84
13.750    0.25    0.06      0.093  |    O  |        |   I   |       |     3.90
13.833    0.25    0.06      0.094  |    O  |        |   I   |       |     3.96
13.917    0.25    0.06      0.095  |    O  |        |   I   |       |     4.02
14.000    0.25    0.06      0.096  |    O  |        |   I   |       |     4.08
14.083    0.28    0.06      0.098  |    O  |        |     I |       |     4.14
14.167    0.30    0.06      0.099  |    O  |        |       I       |     4.21
14.250    0.30    0.06      0.101  |    O  |        |       I       |     4.29
14.333    0.30    0.06      0.103  |    O  |        |       I       |     4.36
14.417    0.29    0.06      0.104  |    O  |        |       I       |     4.43
14.500    0.29    0.06      0.106  |    O  |        |      I|       |     4.50
14.583    0.29    0.06      0.107  |    O  |        |      I|       |     4.57
14.667    0.29    0.06      0.109  |    O  |        |       I       |     4.64
14.750    0.29    0.06      0.110  |    O  |        |       I       |     4.72
14.833    0.28    0.06      0.112  |    O  |        |      I|       |     4.79
14.917    0.28    0.06      0.113  |    O  |        |      I|       |     4.85
15.000    0.28    0.06      0.115  |    O  |        |      I|       |     4.92
15.083    0.27    0.06      0.116  |    O  |        |     I |       |     4.99
15.167    0.27    0.06      0.118  |    O  |        |     I |       |     5.05
15.250    0.27    0.06      0.119  |    O  |        |     I |       |     5.12
15.333    0.26    0.06      0.121  |    O  |        |    I  |       |     5.18
15.417    0.26    0.06      0.122  |    O  |        |    I  |       |     5.24
15.500    0.26    0.06      0.123  |    O  |        |    I  |       |     5.30
15.583    0.23    0.06      0.124  |    O  |        | I     |       |     5.36
15.667    0.21    0.06      0.125  |    O  |        |I      |       |     5.40
15.750    0.21    0.06      0.126  |    O  |        |I      |       |     5.45
15.833    0.21    0.06      0.127  |    O  |        |I      |       |     5.49
15.917    0.21    0.06      0.128  |    O  |        |I      |       |     5.54
16.000    0.21    0.06      0.129  |    O  |        |I      |       |     5.58
16.083    0.11    0.06      0.130  |    O  |I       |       |       |     5.61
16.167    0.04    0.06      0.130  |  I O  |        |       |       |     5.62
16.250    0.02    0.06      0.130  |I   O  |        |       |       |     5.61
16.333    0.02    0.06      0.130  |I   O  |        |       |       |     5.59
16.417    0.02    0.06      0.129  |I   O  |        |       |       |     5.58
16.500    0.02    0.06      0.129  |I   O  |        |       |       |     5.57
16.583    0.01    0.06      0.129  |I   O  |        |       |       |     5.55
16.667    0.01    0.06      0.128  I    O  |        |       |       |     5.53
16.750    0.01    0.06      0.128  I    O  |        |       |       |     5.52
16.833    0.01    0.06      0.128  I    O  |        |       |       |     5.50
16.917    0.01    0.06      0.127  I    O  |        |       |       |     5.48
17.000    0.01    0.06      0.127  I    O  |        |       |       |     5.47
17.083    0.02    0.06      0.126  |I   O  |        |       |       |     5.45
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17.167	0.03	0.06	0.126	| I	O |	|	|	|	5.44
17.250	0.03	0.06	0.126	| I	O |	|	|	|	5.43
17.333	0.03	0.06	0.126	| I	O |	|	|	|	5.42
17.417	0.04	0.06	0.126	| I	O |	|	|	|	5.41
17.500	0.04	0.06	0.125	| I	O |	|	|	|	5.40
17.583	0.04	0.06	0.125	| I	O |	|	|	|	5.39
17.667	0.04	0.06	0.125	| I	O |	|	|	|	5.38
17.750	0.04	0.06	0.125	| I	O |	|	|	|	5.37
17.833	0.03	0.06	0.125	| I	O |	|	|	|	5.36
17.917	0.02	0.06	0.124	| I	O |	|	|	|	5.35
18.000	0.02	0.06	0.124	|I	O |	|	|	|	5.34
18.083	0.02	0.06	0.124	|I	O |	|	|	|	5.33
18.167	0.02	0.06	0.123	|I	O |	|	|	|	5.31
18.250	0.02	0.06	0.123	|I	O |	|	|	|	5.30
18.333	0.02	0.06	0.123	|I	O |	|	|	|	5.29
18.417	0.02	0.06	0.123	| I	O |	|	|	|	5.28
18.500	0.02	0.06	0.122	| I	O |	|	|	|	5.26
18.583	0.02	0.06	0.122	|I	O |	|	|	|	5.25
18.667	0.01	0.06	0.122	|I	O |	|	|	|	5.23
18.750	0.01	0.06	0.121	|I	O |	|	|	|	5.22
18.833	0.01	0.06	0.121	I	O |	|	|	|	5.20
18.917	0.00	0.06	0.121	I	O |	|	|	|	5.18
19.000	0.00	0.06	0.120	I	O |	|	|	|	5.16
19.083	0.01	0.06	0.120	I	O |	|	|	|	5.14
19.167	0.01	0.06	0.119	I	O |	|	|	|	5.13
19.250	0.01	0.06	0.119	|I	O |	|	|	|	5.11
19.333	0.02	0.06	0.119	|I	O |	|	|	|	5.09
19.417	0.02	0.06	0.118	| I	O |	|	|	|	5.08
19.500	0.03	0.06	0.118	| I	O |	|	|	|	5.07
19.583	0.02	0.06	0.118	|I	O |	|	|	|	5.06
19.667	0.01	0.06	0.117	|I	O |	|	|	|	5.04
19.750	0.01	0.06	0.117	|I	O |	|	|	|	5.02
19.833	0.01	0.06	0.117	I	O |	|	|	|	5.01
19.917	0.00	0.06	0.116	I	O |	|	|	|	4.99
20.000	0.00	0.06	0.116	I	O |	|	|	|	4.97
20.083	0.01	0.06	0.116	I	O |	|	|	|	4.95
20.167	0.01	0.06	0.115	|I	O |	|	|	|	4.93
20.250	0.01	0.06	0.115	|I	O |	|	|	|	4.92
20.333	0.01	0.06	0.114	|I	O |	|	|	|	4.90
20.417	0.01	0.06	0.114	|I	O |	|	|	|	4.89
20.500	0.01	0.06	0.114	|I	O |	|	|	|	4.87
20.583	0.01	0.06	0.113	|I	O |	|	|	|	4.86
20.667	0.01	0.06	0.113	|I	O |	|	|	|	4.84
20.750	0.01	0.06	0.113	|I	O |	|	|	|	4.82
20.833	0.01	0.06	0.112	I	O |	|	|	|	4.81
20.917	0.00	0.06	0.112	I	O |	|	|	|	4.79
21.000	0.00	0.06	0.112	I	O |	|	|	|	4.77
21.083	0.01	0.06	0.111	I	O |	|	|	|	4.75
21.167	0.01	0.06	0.111	|I	O |	|	|	|	4.74
21.250	0.02	0.06	0.110	|I	O |	|	|	|	4.72
21.333	0.01	0.06	0.110	I	O |	|	|	|	4.70
21.417	0.00	0.06	0.110	I	O |	|	|	|	4.69
21.500	0.00	0.06	0.109	I	O |	|	|	|	4.67
21.583	0.01	0.06	0.109	I	O |	|	|	|	4.65
21.667	0.01	0.06	0.109	|I	O |	|	|	|	4.63
21.750	0.02	0.06	0.108	|I	O |	|	|	|	4.62
21.833	0.01	0.06	0.108	I	O |	|	|	|	4.60
21.917	0.00	0.06	0.107	I	O |	|	|	|	4.58
22.000	0.00	0.06	0.107	I	O |	|	|	|	4.56
22.083	0.01	0.06	0.107	I	O |	|	|	|	4.55
22.167	0.02	0.06	0.106	|I	O |	|	|	|	4.53
22.250	0.02	0.06	0.106	|I	O |	|	|	|	4.51
22.333	0.01	0.06	0.106	I	O |	|	|	|	4.50

```
22.417    0.01    0.06      0.105  I    O  |       |       |       |     4.48
22.500    0.00    0.06      0.105  I    O  |       |       |       |     4.46
22.583    0.00    0.06      0.104  I    O  |       |       |       |     4.44
22.667    0.00    0.06      0.104  I    O  |       |       |       |     4.42
22.750    0.00    0.06      0.104  I    O  |       |       |       |     4.40
22.833    0.00    0.06      0.103  I    O  |       |       |       |     4.39
22.917    0.00    0.06      0.103  I    O  |       |       |       |     4.37
23.000    0.00    0.06      0.102  I    O  |       |       |       |     4.35
23.083    0.00    0.06      0.102  I    O  |       |       |       |     4.33
23.167    0.00    0.06      0.101  I    O  |       |       |       |     4.31
23.250    0.00    0.06      0.101  I    O  |       |       |       |     4.29
23.333    0.00    0.06      0.101  I    O  |       |       |       |     4.27
23.417    0.00    0.06      0.100  I    O  |       |       |       |     4.25
23.500    0.00    0.06      0.100  I    O  |       |       |       |     4.24
23.583    0.00    0.06      0.099  I    O  |       |       |       |     4.22
23.667    0.00    0.06      0.099  I    O  |       |       |       |     4.20
23.750    0.00    0.06      0.099  I    O  |       |       |       |     4.18
23.833    0.00    0.06      0.098  I    O  |       |       |       |     4.16
23.917    0.00    0.06      0.098  I    O  |       |       |       |     4.14
24.000    0.00    0.06      0.097  I    O  |       |       |       |     4.12
24.083    0.00    0.06      0.097  I    O  |       |       |       |     4.10
24.167    0.00    0.06      0.097  I    O  |       |       |       |     4.08
24.250    0.00    0.06      0.096  I    O  |       |       |       |     4.06
24.333    0.00    0.06      0.096  I    O  |       |       |       |     4.04

      Remaining water in basin =    0.10 (Ac.Ft)

      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   292
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        0.064 (CFS)
                   Total volume =       0.095 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      201.100 to Point/Station      602.000
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    543.00 (Ft.)
      Elevation difference =    2.70 (Ft.)
      Slope of channel =  0.004972 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     0.047(CFS)
      Nearest computed pipe diameter  =      3.00(In.)
      Calculated individual pipe flow  =     0.047(CFS)
      Normal flow depth in pipe =    1.95(In.)
      Flow top width inside pipe =    2.86(In.)
      Critical Depth =    0.13(Ft.)
```

```
Pipe flow velocity =      1.40(Ft/s)
Travel time through pipe =    6.49 min.


Pipe length  =   543.00(Ft.)   Elevation difference =   2.70(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.064(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.064(CFS)
Normal flow depth in pipe =    1.65(In.)
Flow top width inside pipe =    5.35(In.)
Critical Depth =    0.12(Ft.)
Pipe flow velocity =      1.49(Ft/s)
Travel time through pipe =    6.08 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.4667   Travel time =   6.08 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.5075
       dt(routing time-step) =   2.84 (min.),   c* =   0.6124

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.0       0.0       0.0       0.1
----------------------------------------------------------------------
  0+ 5       0.0000      0.00  O         |         |         |         |
  0+10       0.0001      0.00  O         |         |         |         |
  0+15       0.0003      0.00  O         |         |         |         |
  0+20       0.0006      0.00  O         |         |         |         |
  0+25       0.0009      0.00  O         |         |         |         |
  0+30       0.0013      0.00  OI        |         |         |         |
  0+35       0.0017      0.00  |O        |         |         |         |
  0+40       0.0021      0.00  |O        |         |         |         |
  0+45       0.0025      0.00  |O        |         |         |         |
  0+50       0.0030      0.00  |OI       |         |         |         |
  0+55       0.0034      0.00  | O       |         |         |         |
  1+ 0       0.0039      0.00  | O       |         |         |         |
  1+ 5       0.0045      0.01  | OI      |         |         |         |
  1+10       0.0050      0.01  |  O      |         |         |         |
  1+15       0.0054      0.01  |  O      |         |         |         |
  1+20       0.0058      0.01  |  O      |         |         |         |
  1+25       0.0062      0.01  |  OI     |         |         |         |
  1+30       0.0066      0.01  |   O     |         |         |         |
  1+35       0.0069      0.01  |   O     |         |         |         |
  1+40       0.0073      0.01  |   O     |         |         |         |
  1+45       0.0076      0.01  |   OI    |         |         |         |
  1+50       0.0080      0.01  |   OI    |         |         |         |
  1+55       0.0084      0.01  |    O    |         |         |         |
  2+ 0       0.0088      0.01  |    O    |         |         |         |
  2+ 5       0.0093      0.01  |    OI   |         |         |         |
```

```
2+10       0.0097      0.01  |     O   |         |         |         |
2+15       0.0102      0.01  |     O   |         |         |         |
2+20       0.0107      0.01  |     O   |         |         |         |
2+25       0.0111      0.01  |     OI  |         |         |         |
2+30       0.0116      0.01  |      O  |         |         |         |
2+35       0.0120      0.01  |      O  |         |         |         |
2+40       0.0125      0.01  |      OI |         |         |         |
2+45       0.0130      0.01  |       O |         |         |         |
2+50       0.0135      0.01  |       O |         |         |         |
2+55       0.0138      0.01  |       O |         |         |         |
3+ 0       0.0139      0.01  |       O |         |         |         |
3+ 5       0.0138      0.01  |       O |         |         |         |
3+10       0.0137      0.01  |       O |         |         |         |
3+15       0.0135      0.01  |       O |         |         |         |
3+20       0.0133      0.01  |       O |         |         |         |
3+25       0.0132      0.01  |       O |         |         |         |
3+30       0.0130      0.01  |      IO |         |         |         |
3+35       0.0128      0.01  |      O  |         |         |         |
3+40       0.0126      0.01  |      O  |         |         |         |
3+45       0.0125      0.01  |      O  |         |         |         |
3+50       0.0124      0.01  |      O  |         |         |         |
3+55       0.0123      0.01  |      O  |         |         |         |
4+ 0       0.0122      0.01  |      O  |         |         |         |
4+ 5       0.0123      0.01  |      O  |         |         |         |
4+10       0.0123      0.01  |      O  |         |         |         |
4+15       0.0124      0.01  |      O  |         |         |         |
4+20       0.0124      0.01  |      O  |         |         |         |
4+25       0.0126      0.01  |      O  |         |         |         |
4+30       0.0128      0.01  |      OI |         |         |         |
4+35       0.0130      0.01  |       O |         |         |         |
4+40       0.0132      0.01  |       O |         |         |         |
4+45       0.0135      0.01  |       O |         |         |         |
4+50       0.0137      0.01  |       O |         |         |         |
4+55       0.0141      0.01  |       O |         |         |         |
5+ 0       0.0144      0.01  |       OI|         |         |         |
5+ 5       0.0148      0.02  |        O|         |         |         |
5+10       0.0151      0.02  |        O|         |         |         |
5+15       0.0153      0.02  |        O|         |         |         |
5+20       0.0155      0.02  |        O|         |         |         |
5+25       0.0156      0.02  |        O|         |         |         |
5+30       0.0158      0.02  |        O|         |         |         |
5+35       0.0160      0.02  |        OI         |         |         |
5+40       0.0163      0.02  |         O         |         |         |
5+45       0.0167      0.02  |         O         |         |         |
5+50       0.0171      0.02  |         O         |         |         |
5+55       0.0175      0.02  |         OI        |         |         |
6+ 0       0.0180      0.02  |         |O        |         |         |
6+ 5       0.0184      0.02  |         |O        |         |         |
6+10       0.0189      0.02  |         |OI       |         |         |
6+15       0.0194      0.02  |         | O       |         |         |
6+20       0.0200      0.02  |         | O       |         |         |
6+25       0.0206      0.02  |         | OI      |         |         |
6+30       0.0212      0.02  |         |  O      |         |         |
6+35       0.0218      0.02  |         |  O      |         |         |
6+40       0.0224      0.02  |         |  OI     |         |         |
6+45       0.0231      0.02  |         |   O     |         |         |
6+50       0.0238      0.02  |         |   OI    |         |         |
6+55       0.0246      0.03  |         |    O    |         |         |
7+ 0       0.0253      0.03  |         |    OI   |         |         |
7+ 5       0.0261      0.03  |         |     O   |         |         |
7+10       0.0268      0.03  |         |     OI  |         |         |
7+15       0.0275      0.03  |         |      O  |         |         |
7+20       0.0282      0.03  |         |      OI |         |         |
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 7+25       0.0290      0.03  |         |       O |         |         |
 7+30       0.0298      0.03  |         |       OI|         |         |
 7+35       0.0307      0.03  |         |        O|         |         |
 7+40       0.0316      0.03  |         |        OI         |         |
 7+45       0.0326      0.03  |         |         O         |         |
 7+50       0.0336      0.03  |         |         OI        |         |
 7+55       0.0346      0.04  |         |         |OI       |         |
 8+ 0       0.0357      0.04  |         |         | OI      |         |
 8+ 5       0.0369      0.04  |         |         | OI      |         |
 8+10       0.0382      0.04  |         |         |  OI     |         |
 8+15       0.0396      0.04  |         |         |   OI    |         |
 8+20       0.0410      0.04  |         |         |    OI   |         |
 8+25       0.0425      0.04  |         |         |     OI  |         |
 8+30       0.0439      0.05  |         |         |      OI |         |
 8+35       0.0454      0.05  |         |         |       OI|         |
 8+40       0.0469      0.05  |         |         |        OI         |
 8+45       0.0484      0.05  |         |         |         OI        |
 8+50       0.0500      0.05  |         |         |         |OI       |
 8+55       0.0516      0.05  |         |         |         | OI      |
 9+ 0       0.0533      0.06  |         |         |         |  OI     |
 9+ 5       0.0550      0.06  |         |         |         |   OI    |
 9+10       0.0568      0.06  |         |         |         |    OI   |
 9+15       0.0586      0.06  |         |         |         |     OI  |
 9+20       0.0606      0.06  |         |         |         |      O I|
 9+25       0.0624      0.06  |         |         |         |       O I
 9+30       0.0636      0.06  |         |         |         |        OI
 9+35       0.0641      0.06  |         |         |         |        OI
 9+40       0.0642      0.06  |         |         |         |        OI
 9+45       0.0643      0.06  |         |         |         |        OI
 9+50       0.0643      0.06  |         |         |         |        OI
 9+55       0.0643      0.06  |         |         |         |        OI
10+ 0       0.0643      0.06  |         |         |         |        OI
10+ 5       0.0643      0.06  |         |         |         |        OI
10+10       0.0643      0.06  |         |         |         |        OI
10+15       0.0643      0.06  |         |         |         |        OI
10+20       0.0643      0.06  |         |         |         |        OI
10+25       0.0643      0.06  |         |         |         |        OI
10+30       0.0643      0.06  |         |         |         |        OI
10+35       0.0643      0.06  |         |         |         |        OI
10+40       0.0643      0.06  |         |         |         |        OI
10+45       0.0643      0.06  |         |         |         |        OI
10+50       0.0643      0.06  |         |         |         |        OI
10+55       0.0643      0.06  |         |         |         |        OI
11+ 0       0.0643      0.06  |         |         |         |        OI
11+ 5       0.0643      0.06  |         |         |         |        OI
11+10       0.0643      0.06  |         |         |         |        OI
11+15       0.0643      0.06  |         |         |         |        OI
11+20       0.0643      0.06  |         |         |         |        OI
11+25       0.0643      0.06  |         |         |         |        OI
11+30       0.0643      0.06  |         |         |         |        OI
11+35       0.0643      0.06  |         |         |         |        OI
11+40       0.0643      0.06  |         |         |         |        OI
11+45       0.0643      0.06  |         |         |         |        OI
11+50       0.0643      0.06  |         |         |         |        OI
11+55       0.0643      0.06  |         |         |         |        OI
12+ 0       0.0643      0.06  |         |         |         |        OI
12+ 5       0.0643      0.06  |         |         |         |        OI
12+10       0.0643      0.06  |         |         |         |        OI
12+15       0.0643      0.06  |         |         |         |        OI
12+20       0.0643      0.06  |         |         |         |        OI
12+25       0.0643      0.06  |         |         |         |         O
12+30       0.0643      0.06  |         |         |         |         O
12+35       0.0643      0.06  |         |         |         |         O
```

12+40	0.0643	0.06					O
12+45	0.0643	0.06					O
12+50	0.0643	0.06					O
12+55	0.0643	0.06					O
13+ 0	0.0643	0.06					O
13+ 5	0.0643	0.06					O
13+10	0.0643	0.06					O
13+15	0.0643	0.06					O
13+20	0.0643	0.06					O
13+25	0.0643	0.06					O
13+30	0.0643	0.06					O
13+35	0.0643	0.06					O
13+40	0.0643	0.06					O
13+45	0.0643	0.06					O
13+50	0.0643	0.06					O
13+55	0.0643	0.06					O
14+ 0	0.0643	0.06					O
14+ 5	0.0643	0.06					O
14+10	0.0643	0.06					O
14+15	0.0643	0.06					O
14+20	0.0643	0.06					O
14+25	0.0643	0.06					O
14+30	0.0643	0.06					O
14+35	0.0643	0.06					O
14+40	0.0643	0.06					O
14+45	0.0643	0.06					O
14+50	0.0643	0.06					O
14+55	0.0643	0.06					O
15+ 0	0.0643	0.06					O
15+ 5	0.0643	0.06					O
15+10	0.0643	0.06					O
15+15	0.0643	0.06					O
15+20	0.0643	0.06					O
15+25	0.0643	0.06					O
15+30	0.0643	0.06					O
15+35	0.0643	0.06					O
15+40	0.0643	0.06					O
15+45	0.0643	0.06					O
15+50	0.0643	0.06					O
15+55	0.0643	0.06					O
16+ 0	0.0643	0.06					O
16+ 5	0.0643	0.06					O
16+10	0.0643	0.06					O
16+15	0.0643	0.06					O
16+20	0.0643	0.06					O
16+25	0.0643	0.06					O
16+30	0.0643	0.06					O
16+35	0.0643	0.06					O
16+40	0.0643	0.06					O
16+45	0.0643	0.06					O
16+50	0.0643	0.06					O
16+55	0.0643	0.06					O
17+ 0	0.0643	0.06					O
17+ 5	0.0643	0.06					O
17+10	0.0643	0.06					O
17+15	0.0643	0.06					O
17+20	0.0643	0.06					O
17+25	0.0643	0.06					O
17+30	0.0643	0.06					O
17+35	0.0643	0.06					O
17+40	0.0643	0.06					O
17+45	0.0643	0.06					O
17+50	0.0643	0.06					O

17+55	0.0643	0.06					O
18+ 0	0.0643	0.06					O
18+ 5	0.0643	0.06					O
18+10	0.0643	0.06					O
18+15	0.0643	0.06					O
18+20	0.0643	0.06					O
18+25	0.0643	0.06					O
18+30	0.0643	0.06					O
18+35	0.0643	0.06					O
18+40	0.0643	0.06					O
18+45	0.0643	0.06					O
18+50	0.0643	0.06					O
18+55	0.0643	0.06					O
19+ 0	0.0643	0.06					O
19+ 5	0.0643	0.06					O
19+10	0.0643	0.06					O
19+15	0.0643	0.06					O
19+20	0.0643	0.06					O
19+25	0.0643	0.06					O
19+30	0.0643	0.06					O
19+35	0.0643	0.06					O
19+40	0.0643	0.06					O
19+45	0.0643	0.06					O
19+50	0.0643	0.06					O
19+55	0.0643	0.06					O
20+ 0	0.0643	0.06					O
20+ 5	0.0643	0.06					O
20+10	0.0643	0.06					O
20+15	0.0643	0.06					O
20+20	0.0643	0.06					O
20+25	0.0643	0.06					O
20+30	0.0643	0.06					O
20+35	0.0643	0.06					O
20+40	0.0643	0.06					O
20+45	0.0643	0.06					O
20+50	0.0643	0.06					O
20+55	0.0643	0.06					O
21+ 0	0.0643	0.06					O
21+ 5	0.0643	0.06					O
21+10	0.0643	0.06					O
21+15	0.0643	0.06					O
21+20	0.0643	0.06					O
21+25	0.0643	0.06					O
21+30	0.0643	0.06					O
21+35	0.0643	0.06					O
21+40	0.0643	0.06					O
21+45	0.0643	0.06					O
21+50	0.0643	0.06					O
21+55	0.0643	0.06					O
22+ 0	0.0643	0.06					O
22+ 5	0.0643	0.06					O
22+10	0.0643	0.06					O
22+15	0.0643	0.06					O
22+20	0.0643	0.06					O
22+25	0.0643	0.06					O
22+30	0.0643	0.06					O
22+35	0.0643	0.06					O
22+40	0.0643	0.06					O
22+45	0.0643	0.06					O
22+50	0.0643	0.06					O
22+55	0.0643	0.06					O
23+ 0	0.0643	0.06					O
23+ 5	0.0643	0.06					O

```
  23+10       0.0643      0.06  |         |         |         |         O
  23+15       0.0643      0.06  |         |         |         |         O
  23+20       0.0643      0.06  |         |         |         |         O
  23+25       0.0643      0.06  |         |         |         |         O
  23+30       0.0643      0.06  |         |         |         |         O
  23+35       0.0643      0.06  |         |         |         |         O
  23+40       0.0643      0.06  |         |         |         |         O
  23+45       0.0643      0.06  |         |         |         |         O
  23+50       0.0643      0.06  |         |         |         |         O
  23+55       0.0643      0.06  |         |         |         |         O
  24+ 0       0.0643      0.06  |         |         |         |         O
  24+ 5       0.0643      0.06  |         |         |         |         O
  24+10       0.0643      0.06  |         |         |         |         O
  24+15       0.0643      0.06  |         |         |         |         O
  24+20       0.0643      0.06  |         |         |         |         O
  24+25       0.0473      0.00  I         |         |        O|         |
  24+30       0.0183      0.00  I         |O        |         |         |
  24+35       0.0071      0.00  I   O     |         |         |         |
  24+40       0.0028      0.00  IO        |         |         |         |
  24+45       0.0011      0.00  O         |         |         |         |
  24+50       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   298
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.064 (CFS)
                  Total volume =       0.095 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      201.100 to Point/Station      602.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259BPOND1024.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/31/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA C (Pond C)- Q10yr1hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHC110.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    15
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       31.042 (CFS)
             Total volume =       0.916 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.000 to Point/Station      316.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

```
CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    5.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   5.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

Total outflow at this depth =     16.67(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
```

```
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.50(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.50(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     20.81(CFS)

--------------------------------------------------------------------
Total number of inflow hydrograph intervals = 15
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
--------------------------------------------------------------------
--------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
---------------------------------------------------------------------
--------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
---------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.174      0.393      0.173        0.175
   3.000      0.435      0.393      0.434        0.436
   4.000      0.711      6.676      0.688        0.734
   5.000      1.081      6.676      1.058        1.104
   6.000      1.367     16.673      1.310        1.424
   6.500      1.475     20.813      1.403        1.547
--------------------------------------------------------------------
              Hydrograph Detention Basin Routing
---------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
---------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                        Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       7.8   15.52   23.28   31.04 (Ft.)
 0.083    1.36    0.01      0.005  OI      |       |       |       |     0.03
 0.167    3.58    0.05      0.021  O  I    |       |       |       |     0.12
 0.250    4.72    0.11      0.049  O   I   |       |       |       |     0.28
 0.333    5.29    0.19      0.083  O    I  |       |       |       |     0.48
 0.417    6.19    0.27      0.121  O     I |       |       |       |     0.69
 0.500    6.80    0.37      0.163  O      I|       |       |       |     0.94
 0.583    7.92    0.39      0.211  O       I       |       |       |     1.29
 0.667   10.05    0.39      0.271  O       | I     |       |       |     1.74
 0.750   14.82    0.39      0.354  O       |      I|       |       |     2.38
 0.833   31.04    1.95      0.503  | O     |       |       |       I     3.25
 0.917   26.12    5.82      0.673  |     O |       |       | I     |     3.86
 1.000   10.38    6.68      0.756  |     O | I     |       |       |     4.12
 1.083    3.95    6.68      0.760  |   I O |       |       |       |     4.13
 1.167    0.64    6.68      0.729  I     O |       |       |       |     4.05
 1.250    0.13    6.15      0.688  I     O |       |       |       |     3.92
```

1.333	0.00	5.26	0.649	I O	|	|	|	3.78
1.417	0.00	4.50	0.615	I O	|	|	|	3.65
1.500	0.00	3.84	0.587	I O	|	|	|	3.55
1.583	0.00	3.29	0.562	I O	|	|	|	3.46
1.667	0.00	2.81	0.541	I O	|	|	|	3.38
1.750	0.00	2.40	0.523	I O	|	|	|	3.32
1.833	0.00	2.05	0.508	I O	|	|	|	3.26
1.917	0.00	1.75	0.495	IO	|	|	|	3.22
2.000	0.00	1.50	0.484	IO	|	|	|	3.18
2.083	0.00	1.28	0.474	IO	|	|	|	3.14
2.167	0.00	1.09	0.466	IO	|	|	|	3.11
2.250	0.00	0.93	0.459	O	|	|	|	3.09
2.333	0.00	0.80	0.453	O	|	|	|	3.06
2.417	0.00	0.68	0.448	O	|	|	|	3.05
2.500	0.00	0.58	0.443	O	|	|	|	3.03
2.583	0.00	0.50	0.440	O	|	|	|	3.02
2.667	0.00	0.43	0.436	O	|	|	|	3.01
2.750	0.00	0.39	0.434	O	|	|	|	2.99
2.833	0.00	0.39	0.431	O	|	|	|	2.97
2.917	0.00	0.39	0.428	O	|	|	|	2.95
3.000	0.00	0.39	0.426	O	|	|	|	2.93
3.083	0.00	0.39	0.423	O	|	|	|	2.91
3.167	0.00	0.39	0.420	O	|	|	|	2.89
3.250	0.00	0.39	0.417	O	|	|	|	2.87
3.333	0.00	0.39	0.415	O	|	|	|	2.84
3.417	0.00	0.39	0.412	O	|	|	|	2.82
3.500	0.00	0.39	0.409	O	|	|	|	2.80
3.583	0.00	0.39	0.407	O	|	|	|	2.78
3.667	0.00	0.39	0.404	O	|	|	|	2.76
3.750	0.00	0.39	0.401	O	|	|	|	2.74
3.833	0.00	0.39	0.398	O	|	|	|	2.72
3.917	0.00	0.39	0.396	O	|	|	|	2.70
4.000	0.00	0.39	0.393	O	|	|	|	2.68
4.083	0.00	0.39	0.390	O	|	|	|	2.66
4.167	0.00	0.39	0.388	O	|	|	|	2.64
4.250	0.00	0.39	0.385	O	|	|	|	2.62
4.333	0.00	0.39	0.382	O	|	|	|	2.60
4.417	0.00	0.39	0.379	O	|	|	|	2.57
4.500	0.00	0.39	0.377	O	|	|	|	2.55
4.583	0.00	0.39	0.374	O	|	|	|	2.53
4.667	0.00	0.39	0.371	O	|	|	|	2.51
4.750	0.00	0.39	0.369	O	|	|	|	2.49
4.833	0.00	0.39	0.366	O	|	|	|	2.47
4.917	0.00	0.39	0.363	O	|	|	|	2.45
5.000	0.00	0.39	0.361	O	|	|	|	2.43
5.083	0.00	0.39	0.358	O	|	|	|	2.41
5.167	0.00	0.39	0.355	O	|	|	|	2.39
5.250	0.00	0.39	0.352	O	|	|	|	2.37
5.333	0.00	0.39	0.350	O	|	|	|	2.35
5.417	0.00	0.39	0.347	O	|	|	|	2.33
5.500	0.00	0.39	0.344	O	|	|	|	2.30
5.583	0.00	0.39	0.342	O	|	|	|	2.28
5.667	0.00	0.39	0.339	O	|	|	|	2.26
5.750	0.00	0.39	0.336	O	|	|	|	2.24
5.833	0.00	0.39	0.333	O	|	|	|	2.22
5.917	0.00	0.39	0.331	O	|	|	|	2.20
6.000	0.00	0.39	0.328	O	|	|	|	2.18
6.083	0.00	0.39	0.325	O	|	|	|	2.16
6.167	0.00	0.39	0.323	O	|	|	|	2.14
6.250	0.00	0.39	0.320	O	|	|	|	2.12
6.333	0.00	0.39	0.317	O	|	|	|	2.10
6.417	0.00	0.39	0.315	O	|	|	|	2.08
6.500	0.00	0.39	0.312	O	|	|	|	2.06

6.583	0.00	0.39	0.309	O	|	|	|	|	2.04
6.667	0.00	0.39	0.306	O	|	|	|	|	2.01
6.750	0.00	0.39	0.304	O	|	|	|	|	1.99
6.833	0.00	0.39	0.301	O	|	|	|	|	1.97
6.917	0.00	0.39	0.298	O	|	|	|	|	1.95
7.000	0.00	0.39	0.296	O	|	|	|	|	1.93
7.083	0.00	0.39	0.293	O	|	|	|	|	1.91
7.167	0.00	0.39	0.290	O	|	|	|	|	1.89
7.250	0.00	0.39	0.287	O	|	|	|	|	1.87
7.333	0.00	0.39	0.285	O	|	|	|	|	1.85
7.417	0.00	0.39	0.282	O	|	|	|	|	1.83
7.500	0.00	0.39	0.279	O	|	|	|	|	1.81
7.583	0.00	0.39	0.277	O	|	|	|	|	1.79
7.667	0.00	0.39	0.274	O	|	|	|	|	1.77
7.750	0.00	0.39	0.271	O	|	|	|	|	1.74
7.833	0.00	0.39	0.269	O	|	|	|	|	1.72
7.917	0.00	0.39	0.266	O	|	|	|	|	1.70
8.000	0.00	0.39	0.263	O	|	|	|	|	1.68
8.083	0.00	0.39	0.260	O	|	|	|	|	1.66
8.167	0.00	0.39	0.258	O	|	|	|	|	1.64
8.250	0.00	0.39	0.255	O	|	|	|	|	1.62
8.333	0.00	0.39	0.252	O	|	|	|	|	1.60
8.417	0.00	0.39	0.250	O	|	|	|	|	1.58
8.500	0.00	0.39	0.247	O	|	|	|	|	1.56
8.583	0.00	0.39	0.244	O	|	|	|	|	1.54
8.667	0.00	0.39	0.241	O	|	|	|	|	1.52
8.750	0.00	0.39	0.239	O	|	|	|	|	1.50
8.833	0.00	0.39	0.236	O	|	|	|	|	1.48
8.917	0.00	0.39	0.233	O	|	|	|	|	1.45
9.000	0.00	0.39	0.231	O	|	|	|	|	1.43
9.083	0.00	0.39	0.228	O	|	|	|	|	1.41
9.167	0.00	0.39	0.225	O	|	|	|	|	1.39
9.250	0.00	0.39	0.222	O	|	|	|	|	1.37
9.333	0.00	0.39	0.220	O	|	|	|	|	1.35
9.417	0.00	0.39	0.217	O	|	|	|	|	1.33
9.500	0.00	0.39	0.214	O	|	|	|	|	1.31
9.583	0.00	0.39	0.212	O	|	|	|	|	1.29
9.667	0.00	0.39	0.209	O	|	|	|	|	1.27
9.750	0.00	0.39	0.206	O	|	|	|	|	1.25
9.833	0.00	0.39	0.204	O	|	|	|	|	1.23
9.917	0.00	0.39	0.201	O	|	|	|	|	1.21
10.000	0.00	0.39	0.198	O	|	|	|	|	1.18
10.083	0.00	0.39	0.195	O	|	|	|	|	1.16
10.167	0.00	0.39	0.193	O	|	|	|	|	1.14
10.250	0.00	0.39	0.190	O	|	|	|	|	1.12
10.333	0.00	0.39	0.187	O	|	|	|	|	1.10
10.417	0.00	0.39	0.185	O	|	|	|	|	1.08
10.500	0.00	0.39	0.182	O	|	|	|	|	1.06
10.583	0.00	0.39	0.179	O	|	|	|	|	1.04
10.667	0.00	0.39	0.176	O	|	|	|	|	1.02
10.750	0.00	0.39	0.174	O	|	|	|	|	1.00
10.833	0.00	0.39	0.171	O	|	|	|	|	0.98
10.917	0.00	0.38	0.168	O	|	|	|	|	0.97
11.000	0.00	0.37	0.166	O	|	|	|	|	0.95
11.083	0.00	0.37	0.163	O	|	|	|	|	0.94
11.167	0.00	0.36	0.161	O	|	|	|	|	0.92
11.250	0.00	0.36	0.158	O	|	|	|	|	0.91
11.333	0.00	0.35	0.156	O	|	|	|	|	0.90
11.417	0.00	0.35	0.153	O	|	|	|	|	0.88
11.500	0.00	0.34	0.151	O	|	|	|	|	0.87
11.583	0.00	0.34	0.149	O	|	|	|	|	0.85
11.667	0.00	0.33	0.146	O	|	|	|	|	0.84
11.750	0.00	0.33	0.144	O	|	|	|	|	0.83

11.833	0.00	0.32	0.142	O	|	|	|	|	0.82
11.917	0.00	0.32	0.140	O	|	|	|	|	0.80
12.000	0.00	0.31	0.138	O	|	|	|	|	0.79
12.083	0.00	0.31	0.135	O	|	|	|	|	0.78
12.167	0.00	0.30	0.133	O	|	|	|	|	0.77
12.250	0.00	0.30	0.131	O	|	|	|	|	0.75
12.333	0.00	0.29	0.129	O	|	|	|	|	0.74
12.417	0.00	0.29	0.127	O	|	|	|	|	0.73
12.500	0.00	0.28	0.125	O	|	|	|	|	0.72
12.583	0.00	0.28	0.123	O	|	|	|	|	0.71
12.667	0.00	0.27	0.121	O	|	|	|	|	0.70
12.750	0.00	0.27	0.120	O	|	|	|	|	0.69
12.833	0.00	0.27	0.118	O	|	|	|	|	0.68
12.917	0.00	0.26	0.116	O	|	|	|	|	0.67
13.000	0.00	0.26	0.114	O	|	|	|	|	0.66
13.083	0.00	0.25	0.112	O	|	|	|	|	0.65
13.167	0.00	0.25	0.111	O	|	|	|	|	0.64
13.250	0.00	0.25	0.109	O	|	|	|	|	0.63
13.333	0.00	0.24	0.107	O	|	|	|	|	0.62
13.417	0.00	0.24	0.106	O	|	|	|	|	0.61
13.500	0.00	0.23	0.104	O	|	|	|	|	0.60
13.583	0.00	0.23	0.102	O	|	|	|	|	0.59
13.667	0.00	0.23	0.101	O	|	|	|	|	0.58
13.750	0.00	0.22	0.099	O	|	|	|	|	0.57
13.833	0.00	0.22	0.098	O	|	|	|	|	0.56
13.917	0.00	0.22	0.096	O	|	|	|	|	0.55
14.000	0.00	0.21	0.095	O	|	|	|	|	0.54
14.083	0.00	0.21	0.093	O	|	|	|	|	0.54
14.167	0.00	0.21	0.092	O	|	|	|	|	0.53
14.250	0.00	0.20	0.090	O	|	|	|	|	0.52
14.333	0.00	0.20	0.089	O	|	|	|	|	0.51
14.417	0.00	0.20	0.088	O	|	|	|	|	0.50
14.500	0.00	0.19	0.086	O	|	|	|	|	0.50
14.583	0.00	0.19	0.085	O	|	|	|	|	0.49
14.667	0.00	0.19	0.084	O	|	|	|	|	0.48
14.750	0.00	0.19	0.082	O	|	|	|	|	0.47
14.833	0.00	0.18	0.081	O	|	|	|	|	0.47
14.917	0.00	0.18	0.080	O	|	|	|	|	0.46
15.000	0.00	0.18	0.079	O	|	|	|	|	0.45
15.083	0.00	0.17	0.077	O	|	|	|	|	0.44
15.167	0.00	0.17	0.076	O	|	|	|	|	0.44
15.250	0.00	0.17	0.075	O	|	|	|	|	0.43
15.333	0.00	0.17	0.074	O	|	|	|	|	0.42
15.417	0.00	0.16	0.073	O	|	|	|	|	0.42
15.500	0.00	0.16	0.072	O	|	|	|	|	0.41
15.583	0.00	0.16	0.070	O	|	|	|	|	0.41
15.667	0.00	0.16	0.069	O	|	|	|	|	0.40
15.750	0.00	0.15	0.068	O	|	|	|	|	0.39
15.833	0.00	0.15	0.067	O	|	|	|	|	0.39
15.917	0.00	0.15	0.066	O	|	|	|	|	0.38
16.000	0.00	0.15	0.065	O	|	|	|	|	0.37
16.083	0.00	0.15	0.064	O	|	|	|	|	0.37
16.167	0.00	0.14	0.063	O	|	|	|	|	0.36
16.250	0.00	0.14	0.062	O	|	|	|	|	0.36
16.333	0.00	0.14	0.061	O	|	|	|	|	0.35
16.417	0.00	0.14	0.060	O	|	|	|	|	0.35
16.500	0.00	0.13	0.059	O	|	|	|	|	0.34
16.583	0.00	0.13	0.058	O	|	|	|	|	0.34
16.667	0.00	0.13	0.058	O	|	|	|	|	0.33
16.750	0.00	0.13	0.057	O	|	|	|	|	0.33
16.833	0.00	0.13	0.056	O	|	|	|	|	0.32
16.917	0.00	0.12	0.055	O	|	|	|	|	0.32
17.000	0.00	0.12	0.054	O	|	|	|	|	0.31

```
17.083    0.00    0.12      0.053  O       |       |       |       |     0.31
17.167    0.00    0.12      0.052  O       |       |       |       |     0.30
17.250    0.00    0.12      0.052  O       |       |       |       |     0.30
17.333    0.00    0.11      0.051  O       |       |       |       |     0.29
17.417    0.00    0.11      0.050  O       |       |       |       |     0.29
17.500    0.00    0.11      0.049  O       |       |       |       |     0.28
17.583    0.00    0.11      0.049  O       |       |       |       |     0.28
17.667    0.00    0.11      0.048  O       |       |       |       |     0.27
17.750    0.00    0.11      0.047  O       |       |       |       |     0.27
17.833    0.00    0.10      0.046  O       |       |       |       |     0.27
17.917    0.00    0.10      0.046  O       |       |       |       |     0.26
18.000    0.00    0.10      0.045  O       |       |       |       |     0.26
18.083    0.00    0.10      0.044  O       |       |       |       |     0.25

      Remaining water in basin =    0.04 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   217
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        6.676 (CFS)
                   Total volume =       0.872 (Ac.Ft)
            Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      316.100 to Point/Station      316.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    239.75 (Ft.)
      Elevation difference =    3.30 (Ft.)
      Slope of channel =  0.013764 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     2.763(CFS)
      Nearest computed pipe diameter  =     12.00(In.)
      Calculated individual pipe flow  =     2.763(CFS)
      Normal flow depth in pipe =    7.13(In.)
      Flow top width inside pipe =   11.79(In.)
      Critical Depth =    0.71(Ft.)
      Pipe flow velocity =      5.69(Ft/s)
      Travel time through pipe =    0.70 min.


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     6.676(CFS)
      Nearest computed pipe diameter  =     15.00(In.)
      Calculated individual pipe flow  =     6.676(CFS)
      Normal flow depth in pipe =   10.92(In.)
```

```
Flow top width inside pipe =   13.35(In.)
Critical Depth =    1.04(Ft.)
Pipe flow velocity =      6.97(Ft/s)
Travel time through pipe =    0.57 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.8039   Travel time =   0.57 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   7.5645
       dt(routing time-step) =   0.46 (min.),   c* =   1.0000

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
              R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.7       3.3       5.0       6.7
-----------------------------------------------------------------------
  0+ 5       0.0095      0.01  O         |         |         |         |
  0+10       0.0449      0.05  O         |         |         |         |
  0+15       0.1058      0.11  O         |         |         |         |
  0+20       0.1803      0.19  |O        |         |         |         |
  0+25       0.2650      0.27  |O        |         |         |         |
  0+30       0.3601      0.37  | O       |         |         |         |
  0+35       0.3908      0.39  | O       |         |         |         |
  0+40       0.3931      0.39  | O       |         |         |         |
  0+45       0.3931      0.39  | O       |         |         |         |
  0+50       1.8063      1.95  |         OI        |         |         |
  0+55       5.4649      5.82  |         |         |         | O I     |
  1+ 0       6.5975      6.68  |         |         |         |        OI
  1+ 5       6.6763      6.68  |         |         |         |        OI
  1+10       6.6763      6.68  |         |         |         |        OI
  1+15       6.1970      6.15  |         |         |         |     IO  |
  1+20       5.3452      5.26  |         |         |         |IO       |
  1+25       4.5689      4.50  |         |         |     IO  |         |
  1+30       3.9047      3.84  |         |         |  O      |         |
  1+35       3.3370      3.29  |         |        O|         |         |
  1+40       2.8518      2.81  |         |     IO  |         |         |
  1+45       2.4372      2.40  |         |   O     |         |         |
  1+50       2.0829      2.05  |         | O       |         |         |
  1+55       1.7800      1.75  |         O         |         |         |
  2+ 0       1.5212      1.50  |       IO|         |         |         |
  2+ 5       1.3001      1.28  |      O  |         |         |         |
  2+10       1.1111      1.09  |     O   |         |         |         |
  2+15       0.9495      0.93  |    O    |         |         |         |
  2+20       0.8115      0.80  |   O     |         |         |         |
  2+25       0.6935      0.68  |   O     |         |         |         |
  2+30       0.5927      0.58  |  O      |         |         |         |
  2+35       0.5065      0.50  | IO      |         |         |         |
  2+40       0.4329      0.43  | O       |         |         |         |
  2+45       0.3961      0.39  | O       |         |         |         |
  2+50       0.3931      0.39  | O       |         |         |         |
  2+55       0.3931      0.39  | O       |         |         |         |
  3+ 0       0.3931      0.39  | O       |         |         |         |
```

3+ 5	0.3931	0.39	O				
3+10	0.3931	0.39	O				
3+15	0.3931	0.39	O				
3+20	0.3931	0.39	O				
3+25	0.3931	0.39	O				
3+30	0.3931	0.39	O				
3+35	0.3931	0.39	O				
3+40	0.3931	0.39	O				
3+45	0.3931	0.39	O				
3+50	0.3931	0.39	O				
3+55	0.3931	0.39	O				
4+ 0	0.3931	0.39	O				
4+ 5	0.3931	0.39	O				
4+10	0.3931	0.39	O				
4+15	0.3931	0.39	O				
4+20	0.3931	0.39	O				
4+25	0.3931	0.39	O				
4+30	0.3931	0.39	O				
4+35	0.3931	0.39	O				
4+40	0.3931	0.39	O				
4+45	0.3931	0.39	O				
4+50	0.3931	0.39	O				
4+55	0.3931	0.39	O				
5+ 0	0.3931	0.39	O				
5+ 5	0.3931	0.39	O				
5+10	0.3931	0.39	O				
5+15	0.3931	0.39	O				
5+20	0.3931	0.39	O				
5+25	0.3931	0.39	O				
5+30	0.3931	0.39	O				
5+35	0.3931	0.39	O				
5+40	0.3931	0.39	O				
5+45	0.3931	0.39	O				
5+50	0.3931	0.39	O				
5+55	0.3931	0.39	O				
6+ 0	0.3931	0.39	O				
6+ 5	0.3931	0.39	O				
6+10	0.3931	0.39	O				
6+15	0.3931	0.39	O				
6+20	0.3931	0.39	O				
6+25	0.3931	0.39	O				
6+30	0.3931	0.39	O				
6+35	0.3931	0.39	O				
6+40	0.3931	0.39	O				
6+45	0.3931	0.39	O				
6+50	0.3931	0.39	O				
6+55	0.3931	0.39	O				
7+ 0	0.3931	0.39	O				
7+ 5	0.3931	0.39	O				
7+10	0.3931	0.39	O				
7+15	0.3931	0.39	O				
7+20	0.3931	0.39	O				
7+25	0.3931	0.39	O				
7+30	0.3931	0.39	O				
7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				

8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3931	0.39	O				
8+35	0.3931	0.39	O				
8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3926	0.39	O				
10+50	0.3870	0.39	O				
10+55	0.3810	0.38	O				
11+ 0	0.3752	0.37	O				
11+ 5	0.3694	0.37	O				
11+10	0.3637	0.36	O				
11+15	0.3581	0.36	O				
11+20	0.3525	0.35	O				
11+25	0.3471	0.35	O				
11+30	0.3417	0.34	O				
11+35	0.3364	0.34	O				
11+40	0.3313	0.33	O				
11+45	0.3261	0.33	O				
11+50	0.3211	0.32	O				
11+55	0.3161	0.32	O				
12+ 0	0.3113	0.31	O				
12+ 5	0.3065	0.31	O				
12+10	0.3017	0.30	O				
12+15	0.2971	0.30	O				
12+20	0.2925	0.29	O				
12+25	0.2880	0.29	O				
12+30	0.2835	0.28	O				
12+35	0.2791	0.28	O				
12+40	0.2748	0.27	O				
12+45	0.2706	0.27	O				
12+50	0.2664	0.27	O				
12+55	0.2623	0.26	O				
13+ 0	0.2583	0.26	O				
13+ 5	0.2543	0.25	O				
13+10	0.2503	0.25	O				
13+15	0.2465	0.25	O				
13+20	0.2427	0.24	O				
13+25	0.2389	0.24	O				
13+30	0.2352	0.23	O				

```
   13+35       0.2316      0.23  |O        |         |         |         |
   13+40       0.2280      0.23  |O        |         |         |         |
   13+45       0.2245      0.22  |O        |         |         |         |
   13+50       0.2210      0.22  |O        |         |         |         |
   13+55       0.2176      0.22  |O        |         |         |         |
   14+ 0       0.2143      0.21  |O        |         |         |         |
   14+ 5       0.2110      0.21  |O        |         |         |         |
   14+10       0.2077      0.21  |O        |         |         |         |
   14+15       0.2045      0.20  |O        |         |         |         |
   14+20       0.2013      0.20  |O        |         |         |         |
   14+25       0.1982      0.20  |O        |         |         |         |
   14+30       0.1952      0.19  |O        |         |         |         |
   14+35       0.1922      0.19  |O        |         |         |         |
   14+40       0.1892      0.19  |O        |         |         |         |
   14+45       0.1863      0.19  |O        |         |         |         |
   14+50       0.1834      0.18  |O        |         |         |         |
   14+55       0.1806      0.18  |O        |         |         |         |
   15+ 0       0.1778      0.18  |O        |         |         |         |
   15+ 5       0.1750      0.17  |O        |         |         |         |
   15+10       0.1723      0.17  |O        |         |         |         |
   15+15       0.1697      0.17  |O        |         |         |         |
   15+20       0.1671      0.17  IO        |         |         |         |
   15+25       0.1645      0.16  O         |         |         |         |
   15+30       0.1619      0.16  O         |         |         |         |
   15+35       0.1594      0.16  O         |         |         |         |
   15+40       0.1570      0.16  O         |         |         |         |
   15+45       0.1546      0.15  O         |         |         |         |
   15+50       0.1522      0.15  O         |         |         |         |
   15+55       0.1498      0.15  O         |         |         |         |
   16+ 0       0.1475      0.15  O         |         |         |         |
   16+ 5       0.1452      0.15  O         |         |         |         |
   16+10       0.1430      0.14  O         |         |         |         |
   16+15       0.1408      0.14  O         |         |         |         |
   16+20       0.1386      0.14  O         |         |         |         |
   16+25       0.1365      0.14  O         |         |         |         |
   16+30       0.1344      0.13  O         |         |         |         |
   16+35       0.1323      0.13  O         |         |         |         |
   16+40       0.1302      0.13  O         |         |         |         |
   16+45       0.1282      0.13  O         |         |         |         |
   16+50       0.1263      0.13  O         |         |         |         |
   16+55       0.1243      0.12  O         |         |         |         |
   17+ 0       0.1224      0.12  O         |         |         |         |
   17+ 5       0.1205      0.12  O         |         |         |         |
   17+10       0.1186      0.12  O         |         |         |         |
   17+15       0.1168      0.12  O         |         |         |         |
   17+20       0.1150      0.11  O         |         |         |         |
   17+25       0.1132      0.11  O         |         |         |         |
   17+30       0.1115      0.11  O         |         |         |         |
   17+35       0.1098      0.11  O         |         |         |         |
   17+40       0.1081      0.11  O         |         |         |         |
   17+45       0.1064      0.11  O         |         |         |         |
   17+50       0.1048      0.10  O         |         |         |         |
   17+55       0.1031      0.10  O         |         |         |         |
   18+ 0       0.1015      0.10  O         |         |         |         |
   18+ 5       0.1000      0.10  O         |         |         |         |
   18+10       0.0092      0.00  O         |         |         |         |
   18+15       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =   219
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        6.676 (CFS)
                 Total volume =       0.872 (Ac.Ft)
```

```
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.100 to Point/Station      316.200
**** STORE OR DELETE CURRENT HYDROGRAPH ****
______________________________________________________________________
Current stream hydrograph saved in file 27259PONDC101.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =     0
             Time interval =    0.0 (Min.)
             Maximum/Peak flow rate =        0.000 (CFS)
             Total volume =       0.000 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

----------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/31/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA C (Pond C)- Q10yr3hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHC310.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    39
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       16.713 (CFS)
             Total volume =       1.109 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*****************************************************************
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.000 to Point/Station      316.000
**** RETARDING BASIN ROUTING ****
_______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))
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Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    5.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   5.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

Total outflow at this depth =     16.67(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.50(Ft.)    Capacity =   0.39(CFS)
```

```
Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.50(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     20.81(CFS)

--------------------------------------------------------------------
Total number of inflow hydrograph intervals = 39
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
--------------------------------------------------------------------
--------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
---------------------------------------------------------------------
--------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
---------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.174      0.393      0.173        0.175
   3.000      0.435      0.393      0.434        0.436
   4.000      0.711      6.676      0.688        0.734
   5.000      1.081      6.676      1.058        1.104
   6.000      1.367     16.673      1.310        1.424
   6.500      1.475     20.813      1.403        1.547
--------------------------------------------------------------------
             Hydrograph Detention Basin Routing
---------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
---------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                    Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       4.2    8.36   12.53   16.71 (Ft.)
 0.083    0.28    0.00      0.001  O       |       |       |       |     0.01
 0.167    0.53    0.01      0.004  OI      |       |       |       |     0.02
 0.250    0.34    0.02      0.007  O       |       |       |       |     0.04
 0.333    0.63    0.02      0.010  OI      |       |       |       |     0.06
 0.417    1.02    0.03      0.015  OI      |       |       |       |     0.09
 0.500    1.44    0.05      0.024  O I     |       |       |       |     0.14
 0.583    1.44    0.07      0.033  O I     |       |       |       |     0.19
 0.667    1.54    0.10      0.043  O I     |       |       |       |     0.25
 0.750    1.83    0.12      0.054  O  I    |       |       |       |     0.31
 0.833    1.50    0.14      0.064  O I     |       |       |       |     0.37
 0.917    1.32    0.16      0.073  O I     |       |       |       |     0.42
 1.000    1.61    0.18      0.082  O  I    |       |       |       |     0.47
 1.083    2.31    0.21      0.094  O   I   |       |       |       |     0.54
 1.167    2.79    0.25      0.110  O    I  |       |       |       |     0.63
 1.250    2.89    0.29      0.127  O    I  |       |       |       |     0.73
 1.333    2.68    0.33      0.144  O    I  |       |       |       |     0.83
 1.417    3.19    0.37      0.162  O     I |       |       |       |     0.93
 1.500    3.91    0.39      0.184  O      I|       |       |       |     1.08
```

1.583	3.77	0.39	0.208	O I				1.26
1.667	3.87	0.39	0.231	O I				1.44
1.750	4.87	0.39	0.259	O	I			1.65
1.833	5.31	0.39	0.291	O	I			1.90
1.917	5.00	0.39	0.324	O	I			2.15
2.000	4.92	0.39	0.355	O	I			2.39
2.083	5.09	0.39	0.387	O	I			2.63
2.167	6.52	0.39	0.424	O	I			2.92
2.250	8.71	1.22	0.471	| O	I			3.13
2.333	8.00	2.26	0.517	| O	I|			3.30
2.417	10.61	3.28	0.562	| O |	I		3.46
2.500	14.53	4.63	0.621	| O		I	3.67
2.583	16.71	6.23	0.691	| | O		I	3.93
2.667	15.29	6.68	0.757	| | O		I	4.12
2.750	8.34	6.68	0.793	| | O I|			4.22
2.833	3.49	6.68	0.787	| I | O			4.21
2.917	2.28	6.68	0.761	| I | O			4.14
3.000	1.56	6.68	0.728	| I | O			4.05
3.083	0.69	6.24	0.692	|I | O			3.93
3.167	0.15	5.39	0.655	I | O			3.80
3.250	0.04	4.62	0.621	I O			3.67
3.333	0.00	3.95	0.591	I O|			3.57
3.417	0.00	3.38	0.566	I O |			3.48
3.500	0.00	2.89	0.545	I O |			3.40
3.583	0.00	2.47	0.526	I O |			3.33
3.667	0.00	2.11	0.510	I O |			3.27
3.750	0.00	1.80	0.497	I O |			3.22
3.833	0.00	1.54	0.485	I O |			3.18
3.917	0.00	1.32	0.476	I O |			3.15
4.000	0.00	1.12	0.467	I O |			3.12
4.083	0.00	0.96	0.460	IO |			3.09
4.167	0.00	0.82	0.454	IO |			3.07
4.250	0.00	0.70	0.449	IO |			3.05
4.333	0.00	0.60	0.444	IO |			3.03
4.417	0.00	0.51	0.440	O |			3.02
4.500	0.00	0.44	0.437	O |			3.01
4.583	0.00	0.39	0.434	O |			2.99
4.667	0.00	0.39	0.431	O |			2.97
4.750	0.00	0.39	0.429	O |			2.95
4.833	0.00	0.39	0.426	O |			2.93
4.917	0.00	0.39	0.423	O |			2.91
5.000	0.00	0.39	0.421	O |			2.89
5.083	0.00	0.39	0.418	O |			2.87
5.167	0.00	0.39	0.415	O |			2.85
5.250	0.00	0.39	0.412	O |			2.83
5.333	0.00	0.39	0.410	O |			2.81
5.417	0.00	0.39	0.407	O |			2.79
5.500	0.00	0.39	0.404	O |			2.77
5.583	0.00	0.39	0.402	O |			2.74
5.667	0.00	0.39	0.399	O |			2.72
5.750	0.00	0.39	0.396	O |			2.70
5.833	0.00	0.39	0.394	O |			2.68
5.917	0.00	0.39	0.391	O |			2.66
6.000	0.00	0.39	0.388	O |			2.64
6.083	0.00	0.39	0.385	O |			2.62
6.167	0.00	0.39	0.383	O |			2.60
6.250	0.00	0.39	0.380	O |			2.58
6.333	0.00	0.39	0.377	O |			2.56
6.417	0.00	0.39	0.375	O |			2.54
6.500	0.00	0.39	0.372	O |			2.52
6.583	0.00	0.39	0.369	O |			2.50
6.667	0.00	0.39	0.366	O |			2.47
6.750	0.00	0.39	0.364	O |			2.45

6.833	0.00	0.39	0.361	O	|	|	|	|	2.43
6.917	0.00	0.39	0.358	O	|	|	|	|	2.41
7.000	0.00	0.39	0.356	O	|	|	|	|	2.39
7.083	0.00	0.39	0.353	O	|	|	|	|	2.37
7.167	0.00	0.39	0.350	O	|	|	|	|	2.35
7.250	0.00	0.39	0.347	O	|	|	|	|	2.33
7.333	0.00	0.39	0.345	O	|	|	|	|	2.31
7.417	0.00	0.39	0.342	O	|	|	|	|	2.29
7.500	0.00	0.39	0.339	O	|	|	|	|	2.27
7.583	0.00	0.39	0.337	O	|	|	|	|	2.25
7.667	0.00	0.39	0.334	O	|	|	|	|	2.23
7.750	0.00	0.39	0.331	O	|	|	|	|	2.20
7.833	0.00	0.39	0.329	O	|	|	|	|	2.18
7.917	0.00	0.39	0.326	O	|	|	|	|	2.16
8.000	0.00	0.39	0.323	O	|	|	|	|	2.14
8.083	0.00	0.39	0.320	O	|	|	|	|	2.12
8.167	0.00	0.39	0.318	O	|	|	|	|	2.10
8.250	0.00	0.39	0.315	O	|	|	|	|	2.08
8.333	0.00	0.39	0.312	O	|	|	|	|	2.06
8.417	0.00	0.39	0.310	O	|	|	|	|	2.04
8.500	0.00	0.39	0.307	O	|	|	|	|	2.02
8.583	0.00	0.39	0.304	O	|	|	|	|	2.00
8.667	0.00	0.39	0.301	O	|	|	|	|	1.98
8.750	0.00	0.39	0.299	O	|	|	|	|	1.96
8.833	0.00	0.39	0.296	O	|	|	|	|	1.94
8.917	0.00	0.39	0.293	O	|	|	|	|	1.91
9.000	0.00	0.39	0.291	O	|	|	|	|	1.89
9.083	0.00	0.39	0.288	O	|	|	|	|	1.87
9.167	0.00	0.39	0.285	O	|	|	|	|	1.85
9.250	0.00	0.39	0.283	O	|	|	|	|	1.83
9.333	0.00	0.39	0.280	O	|	|	|	|	1.81
9.417	0.00	0.39	0.277	O	|	|	|	|	1.79
9.500	0.00	0.39	0.274	O	|	|	|	|	1.77
9.583	0.00	0.39	0.272	O	|	|	|	|	1.75
9.667	0.00	0.39	0.269	O	|	|	|	|	1.73
9.750	0.00	0.39	0.266	O	|	|	|	|	1.71
9.833	0.00	0.39	0.264	O	|	|	|	|	1.69
9.917	0.00	0.39	0.261	O	|	|	|	|	1.67
10.000	0.00	0.39	0.258	O	|	|	|	|	1.64
10.083	0.00	0.39	0.255	O	|	|	|	|	1.62
10.167	0.00	0.39	0.253	O	|	|	|	|	1.60
10.250	0.00	0.39	0.250	O	|	|	|	|	1.58
10.333	0.00	0.39	0.247	O	|	|	|	|	1.56
10.417	0.00	0.39	0.245	O	|	|	|	|	1.54
10.500	0.00	0.39	0.242	O	|	|	|	|	1.52
10.583	0.00	0.39	0.239	O	|	|	|	|	1.50
10.667	0.00	0.39	0.237	O	|	|	|	|	1.48
10.750	0.00	0.39	0.234	O	|	|	|	|	1.46
10.833	0.00	0.39	0.231	O	|	|	|	|	1.44
10.917	0.00	0.39	0.228	O	|	|	|	|	1.42
11.000	0.00	0.39	0.226	O	|	|	|	|	1.40
11.083	0.00	0.39	0.223	O	|	|	|	|	1.38
11.167	0.00	0.39	0.220	O	|	|	|	|	1.35
11.250	0.00	0.39	0.218	O	|	|	|	|	1.33
11.333	0.00	0.39	0.215	O	|	|	|	|	1.31
11.417	0.00	0.39	0.212	O	|	|	|	|	1.29
11.500	0.00	0.39	0.209	O	|	|	|	|	1.27
11.583	0.00	0.39	0.207	O	|	|	|	|	1.25
11.667	0.00	0.39	0.204	O	|	|	|	|	1.23
11.750	0.00	0.39	0.201	O	|	|	|	|	1.21
11.833	0.00	0.39	0.199	O	|	|	|	|	1.19
11.917	0.00	0.39	0.196	O	|	|	|	|	1.17
12.000	0.00	0.39	0.193	O	|	|	|	|	1.15

12.083	0.00	0.39	0.190	O	|	|	|	|	1.13
12.167	0.00	0.39	0.188	O	|	|	|	|	1.11
12.250	0.00	0.39	0.185	O	|	|	|	|	1.08
12.333	0.00	0.39	0.182	O	|	|	|	|	1.06
12.417	0.00	0.39	0.180	O	|	|	|	|	1.04
12.500	0.00	0.39	0.177	O	|	|	|	|	1.02
12.583	0.00	0.39	0.174	O	|	|	|	|	1.00
12.667	0.00	0.39	0.172	O	|	|	|	|	0.99
12.750	0.00	0.38	0.169	O	|	|	|	|	0.97
12.833	0.00	0.38	0.166	O	|	|	|	|	0.96
12.917	0.00	0.37	0.164	O	|	|	|	|	0.94
13.000	0.00	0.36	0.161	O	|	|	|	|	0.93
13.083	0.00	0.36	0.159	O	|	|	|	|	0.91
13.167	0.00	0.35	0.156	O	|	|	|	|	0.90
13.250	0.00	0.35	0.154	O	|	|	|	|	0.88
13.333	0.00	0.34	0.151	O	|	|	|	|	0.87
13.417	0.00	0.34	0.149	O	|	|	|	|	0.86
13.500	0.00	0.33	0.147	O	|	|	|	|	0.84
13.583	0.00	0.33	0.145	O	|	|	|	|	0.83
13.667	0.00	0.32	0.142	O	|	|	|	|	0.82
13.750	0.00	0.32	0.140	O	|	|	|	|	0.81
13.833	0.00	0.31	0.138	O	|	|	|	|	0.79
13.917	0.00	0.31	0.136	O	|	|	|	|	0.78
14.000	0.00	0.30	0.134	O	|	|	|	|	0.77
14.083	0.00	0.30	0.132	O	|	|	|	|	0.76
14.167	0.00	0.29	0.130	O	|	|	|	|	0.75
14.250	0.00	0.29	0.128	O	|	|	|	|	0.73
14.333	0.00	0.28	0.126	O	|	|	|	|	0.72
14.417	0.00	0.28	0.124	O	|	|	|	|	0.71
14.500	0.00	0.28	0.122	O	|	|	|	|	0.70
14.583	0.00	0.27	0.120	O	|	|	|	|	0.69
14.667	0.00	0.27	0.118	O	|	|	|	|	0.68
14.750	0.00	0.26	0.116	O	|	|	|	|	0.67
14.833	0.00	0.26	0.114	O	|	|	|	|	0.66
14.917	0.00	0.25	0.113	O	|	|	|	|	0.65
15.000	0.00	0.25	0.111	O	|	|	|	|	0.64
15.083	0.00	0.25	0.109	O	|	|	|	|	0.63
15.167	0.00	0.24	0.108	O	|	|	|	|	0.62
15.250	0.00	0.24	0.106	O	|	|	|	|	0.61
15.333	0.00	0.24	0.104	O	|	|	|	|	0.60
15.417	0.00	0.23	0.103	O	|	|	|	|	0.59
15.500	0.00	0.23	0.101	O	|	|	|	|	0.58
15.583	0.00	0.22	0.100	O	|	|	|	|	0.57
15.667	0.00	0.22	0.098	O	|	|	|	|	0.56
15.750	0.00	0.22	0.096	O	|	|	|	|	0.55
15.833	0.00	0.21	0.095	O	|	|	|	|	0.55
15.917	0.00	0.21	0.094	O	|	|	|	|	0.54
16.000	0.00	0.21	0.092	O	|	|	|	|	0.53
16.083	0.00	0.20	0.091	O	|	|	|	|	0.52
16.167	0.00	0.20	0.089	O	|	|	|	|	0.51
16.250	0.00	0.20	0.088	O	|	|	|	|	0.51
16.333	0.00	0.20	0.087	O	|	|	|	|	0.50
16.417	0.00	0.19	0.085	O	|	|	|	|	0.49
16.500	0.00	0.19	0.084	O	|	|	|	|	0.48
16.583	0.00	0.19	0.083	O	|	|	|	|	0.47
16.667	0.00	0.18	0.081	O	|	|	|	|	0.47
16.750	0.00	0.18	0.080	O	|	|	|	|	0.46
16.833	0.00	0.18	0.079	O	|	|	|	|	0.45
16.917	0.00	0.18	0.078	O	|	|	|	|	0.45
17.000	0.00	0.17	0.076	O	|	|	|	|	0.44
17.083	0.00	0.17	0.075	O	|	|	|	|	0.43
17.167	0.00	0.17	0.074	O	|	|	|	|	0.43
17.250	0.00	0.16	0.073	O	|	|	|	|	0.42

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17.333    0.00    0.16      0.072  O       |       |       |       |     0.41
17.417    0.00    0.16      0.071  O       |       |       |       |     0.41
17.500    0.00    0.16      0.070  O       |       |       |       |     0.40
17.583    0.00    0.15      0.069  O       |       |       |       |     0.39
17.667    0.00    0.15      0.067  O       |       |       |       |     0.39
17.750    0.00    0.15      0.066  O       |       |       |       |     0.38
17.833    0.00    0.15      0.065  O       |       |       |       |     0.38
17.917    0.00    0.15      0.064  O       |       |       |       |     0.37
18.000    0.00    0.14      0.063  O       |       |       |       |     0.36
18.083    0.00    0.14      0.062  O       |       |       |       |     0.36
18.167    0.00    0.14      0.061  O       |       |       |       |     0.35
18.250    0.00    0.14      0.060  O       |       |       |       |     0.35
18.333    0.00    0.13      0.060  O       |       |       |       |     0.34
18.417    0.00    0.13      0.059  O       |       |       |       |     0.34
18.500    0.00    0.13      0.058  O       |       |       |       |     0.33
18.583    0.00    0.13      0.057  O       |       |       |       |     0.33
18.667    0.00    0.13      0.056  O       |       |       |       |     0.32
18.750    0.00    0.12      0.055  O       |       |       |       |     0.32
18.833    0.00    0.12      0.054  O       |       |       |       |     0.31
18.917    0.00    0.12      0.053  O       |       |       |       |     0.31
19.000    0.00    0.12      0.053  O       |       |       |       |     0.30
19.083    0.00    0.12      0.052  O       |       |       |       |     0.30
19.167    0.00    0.12      0.051  O       |       |       |       |     0.29
19.250    0.00    0.11      0.050  O       |       |       |       |     0.29
19.333    0.00    0.11      0.049  O       |       |       |       |     0.28
19.417    0.00    0.11      0.049  O       |       |       |       |     0.28
19.500    0.00    0.11      0.048  O       |       |       |       |     0.28
19.583    0.00    0.11      0.047  O       |       |       |       |     0.27
19.667    0.00    0.10      0.046  O       |       |       |       |     0.27
19.750    0.00    0.10      0.046  O       |       |       |       |     0.26
19.833    0.00    0.10      0.045  O       |       |       |       |     0.26
19.917    0.00    0.10      0.044  O       |       |       |       |     0.25
20.000    0.00    0.10      0.044  O       |       |       |       |     0.25

      Remaining water in basin =    0.04 (Ac.Ft)

      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   240
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        6.676 (CFS)
                   Total volume =       1.066 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      316.100 to Point/Station      316.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    239.75 (Ft.)
      Elevation difference =    3.30 (Ft.)
      Slope of channel =  0.013764 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     1.963(CFS)
```

```
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.963(CFS)
Normal flow depth in pipe =    5.78(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =    0.60(Ft.)
Pipe flow velocity =      5.24(Ft/s)
Travel time through pipe =    0.76 min.


Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     6.676(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.676(CFS)
Normal flow depth in pipe =   10.92(In.)
Flow top width inside pipe =   13.35(In.)
Critical Depth =    1.04(Ft.)
Pipe flow velocity =      6.97(Ft/s)
Travel time through pipe =    0.57 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.8039   Travel time =   0.57 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   7.5645
       dt(routing time-step) =   0.46 (min.),   c* =   1.0000

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.7       3.3       5.0       6.7
----------------------------------------------------------------------
  0+ 5       0.0020      0.00  O         |         |         |         |
  0+10       0.0079      0.01  O         |         |         |         |
  0+15       0.0145      0.02  O         |         |         |         |
  0+20       0.0216      0.02  O         |         |         |         |
  0+25       0.0335      0.03  O         |         |         |         |
  0+30       0.0514      0.05  O         |         |         |         |
  0+35       0.0726      0.07  O         |         |         |         |
  0+40       0.0944      0.10  O         |         |         |         |
  0+45       0.1187      0.12  O         |         |         |         |
  0+50       0.1426      0.14  O         |         |         |         |
  0+55       0.1626      0.16  O         |         |         |         |
  1+ 0       0.1827      0.18  |O        |         |         |         |
  1+ 5       0.2094      0.21  |O        |         |         |         |
  1+10       0.2446      0.25  |O        |         |         |         |
  1+15       0.2842      0.29  |O        |         |         |         |
  1+20       0.3229      0.33  |O        |         |         |         |
  1+25       0.3629      0.37  | O       |         |         |         |
  1+30       0.3906      0.39  | O       |         |         |         |
  1+35       0.3931      0.39  | O       |         |         |         |
  1+40       0.3931      0.39  | O       |         |         |         |
```

```
1+45       0.3931      0.39  | O       |         |         |         |
1+50       0.3931      0.39  | O       |         |         |         |
1+55       0.3931      0.39  | O       |         |         |         |
2+ 0       0.3931      0.39  | O       |         |         |         |
2+ 5       0.3931      0.39  | O       |         |         |         |
2+10       0.3931      0.39  | O       |         |         |         |
2+15       1.1449      1.22  |     OI  |         |         |         |
2+20       2.1623      2.26  |         | OI      |         |         |
2+25       3.1879      3.28  |         |        O|         |         |
2+30       4.5085      4.63  |         |         |      O  |         |
2+35       6.0836      6.23  |         |         |         |     OI  |
2+40       6.6352      6.68  |         |         |         |        OI
2+45       6.6763      6.68  |         |         |         |        OI
2+50       6.6763      6.68  |         |         |         |        OI
2+55       6.6763      6.68  |         |         |         |         O
3+ 0       6.6763      6.68  |         |         |         |         O
3+ 5       6.2777      6.24  |         |         |         |      O  |
3+10       5.4698      5.39  |         |         |         | O       |
3+15       4.6928      4.62  |         |         |      IO |         |
3+20       4.0143      3.95  |         |         |  IO     |         |
3+25       3.4309      3.38  |         |         O         |         |
3+30       2.9321      2.89  |         |      O  |         |         |
3+35       2.5058      2.47  |         |   IO    |         |         |
3+40       2.1415      2.11  |         | O       |         |         |
3+45       1.8301      1.80  |         O         |         |         |
3+50       1.5641      1.54  |        O|         |         |         |
3+55       1.3367      1.32  |      IO |         |         |         |
4+ 0       1.1423      1.12  |     O   |         |         |         |
4+ 5       0.9762      0.96  |    O    |         |         |         |
4+10       0.8343      0.82  |   O     |         |         |         |
4+15       0.7130      0.70  |   O     |         |         |         |
4+20       0.6094      0.60  |  O      |         |         |         |
4+25       0.5208      0.51  |  O      |         |         |         |
4+30       0.4450      0.44  | O       |         |         |         |
4+35       0.3972      0.39  | O       |         |         |         |
4+40       0.3931      0.39  | O       |         |         |         |
4+45       0.3931      0.39  | O       |         |         |         |
4+50       0.3931      0.39  | O       |         |         |         |
4+55       0.3931      0.39  | O       |         |         |         |
5+ 0       0.3931      0.39  | O       |         |         |         |
5+ 5       0.3931      0.39  | O       |         |         |         |
5+10       0.3931      0.39  | O       |         |         |         |
5+15       0.3931      0.39  | O       |         |         |         |
5+20       0.3931      0.39  | O       |         |         |         |
5+25       0.3931      0.39  | O       |         |         |         |
5+30       0.3931      0.39  | O       |         |         |         |
5+35       0.3931      0.39  | O       |         |         |         |
5+40       0.3931      0.39  | O       |         |         |         |
5+45       0.3931      0.39  | O       |         |         |         |
5+50       0.3931      0.39  | O       |         |         |         |
5+55       0.3931      0.39  | O       |         |         |         |
6+ 0       0.3931      0.39  | O       |         |         |         |
6+ 5       0.3931      0.39  | O       |         |         |         |
6+10       0.3931      0.39  | O       |         |         |         |
6+15       0.3931      0.39  | O       |         |         |         |
6+20       0.3931      0.39  | O       |         |         |         |
6+25       0.3931      0.39  | O       |         |         |         |
6+30       0.3931      0.39  | O       |         |         |         |
6+35       0.3931      0.39  | O       |         |         |         |
6+40       0.3931      0.39  | O       |         |         |         |
6+45       0.3931      0.39  | O       |         |         |         |
6+50       0.3931      0.39  | O       |         |         |         |
6+55       0.3931      0.39  | O       |         |         |         |
```

7+ 0	0.3931	0.39	O				
7+ 5	0.3931	0.39	O				
7+10	0.3931	0.39	O				
7+15	0.3931	0.39	O				
7+20	0.3931	0.39	O				
7+25	0.3931	0.39	O				
7+30	0.3931	0.39	O				
7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				
8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3931	0.39	O				
8+35	0.3931	0.39	O				
8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3931	0.39	O				
10+50	0.3931	0.39	O				
10+55	0.3931	0.39	O				
11+ 0	0.3931	0.39	O				
11+ 5	0.3931	0.39	O				
11+10	0.3931	0.39	O				
11+15	0.3931	0.39	O				
11+20	0.3931	0.39	O				
11+25	0.3931	0.39	O				
11+30	0.3931	0.39	O				
11+35	0.3931	0.39	O				
11+40	0.3931	0.39	O				
11+45	0.3931	0.39	O				
11+50	0.3931	0.39	O				
11+55	0.3931	0.39	O				
12+ 0	0.3931	0.39	O				
12+ 5	0.3931	0.39	O				
12+10	0.3931	0.39	O				

12+15	0.3931	0.39	| O	|	|	|	|
12+20	0.3931	0.39	| O	|	|	|	|
12+25	0.3931	0.39	| O	|	|	|	|
12+30	0.3931	0.39	| O	|	|	|	|
12+35	0.3931	0.39	| O	|	|	|	|
12+40	0.3880	0.39	| O	|	|	|	|
12+45	0.3821	0.38	| O	|	|	|	|
12+50	0.3762	0.38	| O	|	|	|	|
12+55	0.3704	0.37	| O	|	|	|	|
13+ 0	0.3647	0.36	| O	|	|	|	|
13+ 5	0.3591	0.36	| O	|	|	|	|
13+10	0.3535	0.35	| O	|	|	|	|
13+15	0.3481	0.35	| O	|	|	|	|
13+20	0.3427	0.34	| O	|	|	|	|
13+25	0.3374	0.34	| O	|	|	|	|
13+30	0.3322	0.33	|O	|	|	|	|
13+35	0.3271	0.33	|O	|	|	|	|
13+40	0.3220	0.32	|O	|	|	|	|
13+45	0.3170	0.32	|O	|	|	|	|
13+50	0.3121	0.31	|O	|	|	|	|
13+55	0.3073	0.31	|O	|	|	|	|
14+ 0	0.3026	0.30	|O	|	|	|	|
14+ 5	0.2979	0.30	|O	|	|	|	|
14+10	0.2933	0.29	|O	|	|	|	|
14+15	0.2888	0.29	|O	|	|	|	|
14+20	0.2843	0.28	|O	|	|	|	|
14+25	0.2799	0.28	|O	|	|	|	|
14+30	0.2756	0.28	|O	|	|	|	|
14+35	0.2714	0.27	|O	|	|	|	|
14+40	0.2672	0.27	|O	|	|	|	|
14+45	0.2630	0.26	|O	|	|	|	|
14+50	0.2590	0.26	|O	|	|	|	|
14+55	0.2550	0.25	|O	|	|	|	|
15+ 0	0.2510	0.25	|O	|	|	|	|
15+ 5	0.2472	0.25	|O	|	|	|	|
15+10	0.2434	0.24	|O	|	|	|	|
15+15	0.2396	0.24	|O	|	|	|	|
15+20	0.2359	0.24	|O	|	|	|	|
15+25	0.2323	0.23	|O	|	|	|	|
15+30	0.2287	0.23	|O	|	|	|	|
15+35	0.2251	0.22	|O	|	|	|	|
15+40	0.2217	0.22	|O	|	|	|	|
15+45	0.2182	0.22	|O	|	|	|	|
15+50	0.2149	0.21	|O	|	|	|	|
15+55	0.2116	0.21	|O	|	|	|	|
16+ 0	0.2083	0.21	|O	|	|	|	|
16+ 5	0.2051	0.20	|O	|	|	|	|
16+10	0.2019	0.20	|O	|	|	|	|
16+15	0.1988	0.20	|O	|	|	|	|
16+20	0.1957	0.20	|O	|	|	|	|
16+25	0.1927	0.19	|O	|	|	|	|
16+30	0.1897	0.19	|O	|	|	|	|
16+35	0.1868	0.19	|O	|	|	|	|
16+40	0.1839	0.18	|O	|	|	|	|
16+45	0.1811	0.18	|O	|	|	|	|
16+50	0.1783	0.18	|O	|	|	|	|
16+55	0.1755	0.18	|O	|	|	|	|
17+ 0	0.1728	0.17	|O	|	|	|	|
17+ 5	0.1701	0.17	|O	|	|	|	|
17+10	0.1675	0.17	|O	|	|	|	|
17+15	0.1649	0.16	O	|	|	|	|
17+20	0.1624	0.16	O	|	|	|	|
17+25	0.1599	0.16	O	|	|	|	|

```
  17+30       0.1574      0.16  O         |         |         |         |
  17+35       0.1550      0.15  O         |         |         |         |
  17+40       0.1526      0.15  O         |         |         |         |
  17+45       0.1502      0.15  O         |         |         |         |
  17+50       0.1479      0.15  O         |         |         |         |
  17+55       0.1456      0.15  O         |         |         |         |
  18+ 0       0.1434      0.14  O         |         |         |         |
  18+ 5       0.1412      0.14  O         |         |         |         |
  18+10       0.1390      0.14  O         |         |         |         |
  18+15       0.1368      0.14  O         |         |         |         |
  18+20       0.1347      0.13  O         |         |         |         |
  18+25       0.1327      0.13  O         |         |         |         |
  18+30       0.1306      0.13  O         |         |         |         |
  18+35       0.1286      0.13  O         |         |         |         |
  18+40       0.1266      0.13  O         |         |         |         |
  18+45       0.1247      0.12  O         |         |         |         |
  18+50       0.1227      0.12  O         |         |         |         |
  18+55       0.1208      0.12  O         |         |         |         |
  19+ 0       0.1190      0.12  O         |         |         |         |
  19+ 5       0.1171      0.12  O         |         |         |         |
  19+10       0.1153      0.12  O         |         |         |         |
  19+15       0.1135      0.11  O         |         |         |         |
  19+20       0.1118      0.11  O         |         |         |         |
  19+25       0.1101      0.11  O         |         |         |         |
  19+30       0.1084      0.11  O         |         |         |         |
  19+35       0.1067      0.11  O         |         |         |         |
  19+40       0.1050      0.10  O         |         |         |         |
  19+45       0.1034      0.10  O         |         |         |         |
  19+50       0.1018      0.10  O         |         |         |         |
  19+55       0.1003      0.10  O         |         |         |         |
  20+ 0       0.0987      0.10  O         |         |         |         |
  20+ 5       0.0091      0.00  O         |         |         |         |
  20+10       0.0000      0.00  O         |         |         |         |
-------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   242
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        6.676 (CFS)
                  Total volume =       1.066 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      *************************************************************************
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      316.100 to Point/Station      316.200
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ________________________________________________________________________
      Current stream hydrograph saved in file 27259PONDC103.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      *************************************************************************

      ------------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/31/18

----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA C (Pond C)- Q10yr6hr(ONSITE)- Unit Hydrograph Method
----------------------------------------------------------------------


Program License Serial Number 4066

----------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHC610.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    75
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =       16.511 (CFS)
             Total volume =       1.486 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.000 to Point/Station      316.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

```
CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    5.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   5.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

Total outflow at this depth =     16.67(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
```

```
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.50(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.50(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     20.81(CFS)

-------------------------------------------------------------------
Total number of inflow hydrograph intervals = 75
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
-------------------------------------------------------------------
-------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
-------------------------------------------------------------------
-------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
-------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.174      0.393      0.173        0.175
   3.000      0.435      0.393      0.434        0.436
   4.000      0.711      6.676      0.688        0.734
   5.000      1.081      6.676      1.058        1.104
   6.000      1.367     16.673      1.310        1.424
   6.500      1.475     20.813      1.403        1.547
-------------------------------------------------------------------
              Hydrograph Detention Basin Routing
-------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                        Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       4.1    8.26   12.38   16.51 (Ft.)
 0.083    0.66    0.01      0.002  OI      |       |       |       |     0.01
 0.167    1.38    0.02      0.009  O I     |       |       |       |     0.05
 0.250    1.61    0.04      0.019  O  I    |       |       |       |     0.11
 0.333    1.68    0.07      0.030  O  I    |       |       |       |     0.17
 0.417    1.69    0.09      0.041  O  I    |       |       |       |     0.24
 0.500    1.82    0.12      0.053  O  I    |       |       |       |     0.30
 0.583    1.94    0.15      0.065  O  I    |       |       |       |     0.37
 0.667    1.96    0.17      0.077  O  I    |       |       |       |     0.44
 0.750    1.97    0.20      0.089  O  I    |       |       |       |     0.51
 0.833    1.97    0.23      0.101  O  I    |       |       |       |     0.58
 0.917    1.97    0.26      0.113  O  I    |       |       |       |     0.65
 1.000    1.19    0.28      0.122  O I     |       |       |       |     0.70
 1.083    0.49    0.29      0.126  O       |       |       |       |     0.73
 1.167    0.36    0.29      0.127  O       |       |       |       |     0.73
 1.250    0.30    0.29      0.128  O       |       |       |       |     0.73
```

```
1.333    0.30    0.29      0.128  O       |       |       |       |     0.73
1.417    0.30    0.29      0.128  O       |       |       |       |     0.73
1.500    0.30    0.29      0.128  O       |       |       |       |     0.73
1.583    0.30    0.29      0.128  O       |       |       |       |     0.74
1.667    0.30    0.29      0.128  O       |       |       |       |     0.74
1.750    0.30    0.29      0.128  O       |       |       |       |     0.74
1.833    0.30    0.29      0.128  O       |       |       |       |     0.74
1.917    0.30    0.29      0.128  O       |       |       |       |     0.74
2.000    0.48    0.29      0.129  O       |       |       |       |     0.74
2.083    0.46    0.29      0.130  O       |       |       |       |     0.75
2.167    0.51    0.30      0.131  O       |       |       |       |     0.76
2.250    0.65    0.30      0.133  OI      |       |       |       |     0.77
2.333    0.67    0.31      0.136  OI      |       |       |       |     0.78
2.417    0.68    0.31      0.138  OI      |       |       |       |     0.80
2.500    0.68    0.32      0.141  OI      |       |       |       |     0.81
2.583    0.68    0.32      0.143  OI      |       |       |       |     0.82
2.667    0.68    0.33      0.146  OI      |       |       |       |     0.84
2.750    0.86    0.34      0.149  OI      |       |       |       |     0.86
2.833    1.02    0.35      0.153  OI      |       |       |       |     0.88
2.917    1.05    0.36      0.158  O I     |       |       |       |     0.91
3.000    1.06    0.37      0.163  O I     |       |       |       |     0.93
3.083    1.06    0.38      0.167  O I     |       |       |       |     0.96
3.167    1.24    0.39      0.173  O I     |       |       |       |     0.99
3.250    1.40    0.39      0.179  O I     |       |       |       |     1.04
3.333    1.43    0.39      0.186  O I     |       |       |       |     1.09
3.417    1.62    0.39      0.194  O  I    |       |       |       |     1.15
3.500    1.96    0.39      0.204  O  I    |       |       |       |     1.23
3.583    2.33    0.39      0.216  O   I   |       |       |       |     1.32
3.667    2.53    0.39      0.230  O   I   |       |       |       |     1.43
3.750    2.75    0.39      0.245  O    I  |       |       |       |     1.55
3.833    2.93    0.39      0.262  O    I  |       |       |       |     1.67
3.917    3.13    0.39      0.280  O     I |       |       |       |     1.81
4.000    3.31    0.39      0.300  O     I |       |       |       |     1.96
4.083    3.52    0.39      0.320  O     I |       |       |       |     2.12
4.167    3.87    0.39      0.343  O      I|       |       |       |     2.30
4.250    4.23    0.39      0.368  O       I       |       |       |     2.49
4.333    4.62    0.39      0.396  O       I       |       |       |     2.70
4.417    5.00    0.39      0.426  O       |I      |       |       |     2.93
4.500    5.20    0.90      0.457  |O      | I     |       |       |     3.08
4.583    5.42    1.54      0.485  | O     | I     |       |       |     3.18
4.667    5.77    2.13      0.511  |   O   |  I    |       |       |     3.28
4.750    6.14    2.68      0.536  |    O  |  I    |       |       |     3.36
4.833    6.34    3.20      0.558  |     O |   I   |       |       |     3.45
4.917    6.56    3.67      0.579  |      O|   I   |       |       |     3.52
5.000    6.91    4.12      0.599  |      O|    I  |       |       |     3.59
5.083    7.99    4.60      0.620  |       O      I|       |       |     3.67
5.167    9.73    5.22      0.647  |       | O     | I     |       |     3.77
5.250   11.23    5.99      0.681  |       |  O    |    I  |       |     3.89
5.333   12.45    6.68      0.719  |       |   O   |       I       |     4.02
5.417   13.98    6.68      0.764  |       |   O   |       |  I    |     4.14
5.500   16.51    6.68      0.823  |       |   O   |       |       I     4.30
5.583   11.54    6.68      0.873  |       |   O   |     I |       |     4.44
5.667    4.19    6.68      0.882  |       I   O   |       |       |     4.46
5.750    2.04    6.68      0.857  |  I    |   O   |       |       |     4.39
5.833    1.57    6.68      0.823  |  I    |   O   |       |       |     4.30
5.917    1.14    6.68      0.787  | I     |   O   |       |       |     4.20
6.000    0.79    6.68      0.747  |I      |   O   |       |       |     4.10
6.083    0.35    6.56      0.706  I       |   O   |       |       |     3.98
6.167    0.07    5.64      0.665  I       | O     |       |       |     3.83
6.250    0.02    4.82      0.630  I       |O      |       |       |     3.71
6.333    0.00    4.12      0.599  I      O|       |       |       |     3.59
6.417    0.00    3.52      0.573  I     O |       |       |       |     3.50
6.500    0.00    3.01      0.550  I    O  |       |       |       |     3.42
```

6.583	0.00	2.57	0.531	I O	|	|	|	3.35
6.667	0.00	2.20	0.514	I O	|	|	|	3.29
6.750	0.00	1.88	0.500	I O	|	|	|	3.24
6.833	0.00	1.61	0.488	I O	|	|	|	3.19
6.917	0.00	1.37	0.478	I O	|	|	|	3.16
7.000	0.00	1.17	0.469	I O	|	|	|	3.12
7.083	0.00	1.00	0.462	IO	|	|	|	3.10
7.167	0.00	0.86	0.455	IO	|	|	|	3.07
7.250	0.00	0.73	0.450	IO	|	|	|	3.05
7.333	0.00	0.63	0.445	IO	|	|	|	3.04
7.417	0.00	0.53	0.441	IO	|	|	|	3.02
7.500	0.00	0.46	0.438	O	|	|	|	3.01
7.583	0.00	0.39	0.435	O	|	|	|	3.00
7.667	0.00	0.39	0.432	O	|	|	|	2.98
7.750	0.00	0.39	0.429	O	|	|	|	2.96
7.833	0.00	0.39	0.427	O	|	|	|	2.94
7.917	0.00	0.39	0.424	O	|	|	|	2.92
8.000	0.00	0.39	0.421	O	|	|	|	2.90
8.083	0.00	0.39	0.419	O	|	|	|	2.87
8.167	0.00	0.39	0.416	O	|	|	|	2.85
8.250	0.00	0.39	0.413	O	|	|	|	2.83
8.333	0.00	0.39	0.411	O	|	|	|	2.81
8.417	0.00	0.39	0.408	O	|	|	|	2.79
8.500	0.00	0.39	0.405	O	|	|	|	2.77
8.583	0.00	0.39	0.402	O	|	|	|	2.75
8.667	0.00	0.39	0.400	O	|	|	|	2.73
8.750	0.00	0.39	0.397	O	|	|	|	2.71
8.833	0.00	0.39	0.394	O	|	|	|	2.69
8.917	0.00	0.39	0.392	O	|	|	|	2.67
9.000	0.00	0.39	0.389	O	|	|	|	2.65
9.083	0.00	0.39	0.386	O	|	|	|	2.63
9.167	0.00	0.39	0.383	O	|	|	|	2.60
9.250	0.00	0.39	0.381	O	|	|	|	2.58
9.333	0.00	0.39	0.378	O	|	|	|	2.56
9.417	0.00	0.39	0.375	O	|	|	|	2.54
9.500	0.00	0.39	0.373	O	|	|	|	2.52
9.583	0.00	0.39	0.370	O	|	|	|	2.50
9.667	0.00	0.39	0.367	O	|	|	|	2.48
9.750	0.00	0.39	0.365	O	|	|	|	2.46
9.833	0.00	0.39	0.362	O	|	|	|	2.44
9.917	0.00	0.39	0.359	O	|	|	|	2.42
10.000	0.00	0.39	0.356	O	|	|	|	2.40
10.083	0.00	0.39	0.354	O	|	|	|	2.38
10.167	0.00	0.39	0.351	O	|	|	|	2.36
10.250	0.00	0.39	0.348	O	|	|	|	2.34
10.333	0.00	0.39	0.346	O	|	|	|	2.31
10.417	0.00	0.39	0.343	O	|	|	|	2.29
10.500	0.00	0.39	0.340	O	|	|	|	2.27
10.583	0.00	0.39	0.337	O	|	|	|	2.25
10.667	0.00	0.39	0.335	O	|	|	|	2.23
10.750	0.00	0.39	0.332	O	|	|	|	2.21
10.833	0.00	0.39	0.329	O	|	|	|	2.19
10.917	0.00	0.39	0.327	O	|	|	|	2.17
11.000	0.00	0.39	0.324	O	|	|	|	2.15
11.083	0.00	0.39	0.321	O	|	|	|	2.13
11.167	0.00	0.39	0.318	O	|	|	|	2.11
11.250	0.00	0.39	0.316	O	|	|	|	2.09
11.333	0.00	0.39	0.313	O	|	|	|	2.07
11.417	0.00	0.39	0.310	O	|	|	|	2.04
11.500	0.00	0.39	0.308	O	|	|	|	2.02
11.583	0.00	0.39	0.305	O	|	|	|	2.00
11.667	0.00	0.39	0.302	O	|	|	|	1.98
11.750	0.00	0.39	0.300	O	|	|	|	1.96

11.833	0.00	0.39	0.297	O	|	|	|	|	1.94
11.917	0.00	0.39	0.294	O	|	|	|	|	1.92
12.000	0.00	0.39	0.291	O	|	|	|	|	1.90
12.083	0.00	0.39	0.289	O	|	|	|	|	1.88
12.167	0.00	0.39	0.286	O	|	|	|	|	1.86
12.250	0.00	0.39	0.283	O	|	|	|	|	1.84
12.333	0.00	0.39	0.281	O	|	|	|	|	1.82
12.417	0.00	0.39	0.278	O	|	|	|	|	1.80
12.500	0.00	0.39	0.275	O	|	|	|	|	1.78
12.583	0.00	0.39	0.272	O	|	|	|	|	1.75
12.667	0.00	0.39	0.270	O	|	|	|	|	1.73
12.750	0.00	0.39	0.267	O	|	|	|	|	1.71
12.833	0.00	0.39	0.264	O	|	|	|	|	1.69
12.917	0.00	0.39	0.262	O	|	|	|	|	1.67
13.000	0.00	0.39	0.259	O	|	|	|	|	1.65
13.083	0.00	0.39	0.256	O	|	|	|	|	1.63
13.167	0.00	0.39	0.254	O	|	|	|	|	1.61
13.250	0.00	0.39	0.251	O	|	|	|	|	1.59
13.333	0.00	0.39	0.248	O	|	|	|	|	1.57
13.417	0.00	0.39	0.245	O	|	|	|	|	1.55
13.500	0.00	0.39	0.243	O	|	|	|	|	1.53
13.583	0.00	0.39	0.240	O	|	|	|	|	1.51
13.667	0.00	0.39	0.237	O	|	|	|	|	1.48
13.750	0.00	0.39	0.235	O	|	|	|	|	1.46
13.833	0.00	0.39	0.232	O	|	|	|	|	1.44
13.917	0.00	0.39	0.229	O	|	|	|	|	1.42
14.000	0.00	0.39	0.226	O	|	|	|	|	1.40
14.083	0.00	0.39	0.224	O	|	|	|	|	1.38
14.167	0.00	0.39	0.221	O	|	|	|	|	1.36
14.250	0.00	0.39	0.218	O	|	|	|	|	1.34
14.333	0.00	0.39	0.216	O	|	|	|	|	1.32
14.417	0.00	0.39	0.213	O	|	|	|	|	1.30
14.500	0.00	0.39	0.210	O	|	|	|	|	1.28
14.583	0.00	0.39	0.207	O	|	|	|	|	1.26
14.667	0.00	0.39	0.205	O	|	|	|	|	1.24
14.750	0.00	0.39	0.202	O	|	|	|	|	1.22
14.833	0.00	0.39	0.199	O	|	|	|	|	1.19
14.917	0.00	0.39	0.197	O	|	|	|	|	1.17
15.000	0.00	0.39	0.194	O	|	|	|	|	1.15
15.083	0.00	0.39	0.191	O	|	|	|	|	1.13
15.167	0.00	0.39	0.189	O	|	|	|	|	1.11
15.250	0.00	0.39	0.186	O	|	|	|	|	1.09
15.333	0.00	0.39	0.183	O	|	|	|	|	1.07
15.417	0.00	0.39	0.180	O	|	|	|	|	1.05
15.500	0.00	0.39	0.178	O	|	|	|	|	1.03
15.583	0.00	0.39	0.175	O	|	|	|	|	1.01
15.667	0.00	0.39	0.172	O	|	|	|	|	0.99
15.750	0.00	0.38	0.170	O	|	|	|	|	0.98
15.833	0.00	0.38	0.167	O	|	|	|	|	0.96
15.917	0.00	0.37	0.164	O	|	|	|	|	0.95
16.000	0.00	0.37	0.162	O	|	|	|	|	0.93
16.083	0.00	0.36	0.159	O	|	|	|	|	0.92
16.167	0.00	0.35	0.157	O	|	|	|	|	0.90
16.250	0.00	0.35	0.155	O	|	|	|	|	0.89
16.333	0.00	0.34	0.152	O	|	|	|	|	0.87
16.417	0.00	0.34	0.150	O	|	|	|	|	0.86
16.500	0.00	0.33	0.147	O	|	|	|	|	0.85
16.583	0.00	0.33	0.145	O	|	|	|	|	0.83
16.667	0.00	0.32	0.143	O	|	|	|	|	0.82
16.750	0.00	0.32	0.141	O	|	|	|	|	0.81
16.833	0.00	0.31	0.139	O	|	|	|	|	0.80
16.917	0.00	0.31	0.136	O	|	|	|	|	0.78
17.000	0.00	0.30	0.134	O	|	|	|	|	0.77

17.083	0.00	0.30	0.132	O	|	|	|	|	0.76
17.167	0.00	0.29	0.130	O	|	|	|	|	0.75
17.250	0.00	0.29	0.128	O	|	|	|	|	0.74
17.333	0.00	0.29	0.126	O	|	|	|	|	0.73
17.417	0.00	0.28	0.124	O	|	|	|	|	0.71
17.500	0.00	0.28	0.122	O	|	|	|	|	0.70
17.583	0.00	0.27	0.120	O	|	|	|	|	0.69
17.667	0.00	0.27	0.119	O	|	|	|	|	0.68
17.750	0.00	0.26	0.117	O	|	|	|	|	0.67
17.833	0.00	0.26	0.115	O	|	|	|	|	0.66
17.917	0.00	0.26	0.113	O	|	|	|	|	0.65
18.000	0.00	0.25	0.111	O	|	|	|	|	0.64
18.083	0.00	0.25	0.110	O	|	|	|	|	0.63
18.167	0.00	0.24	0.108	O	|	|	|	|	0.62
18.250	0.00	0.24	0.106	O	|	|	|	|	0.61
18.333	0.00	0.24	0.105	O	|	|	|	|	0.60
18.417	0.00	0.23	0.103	O	|	|	|	|	0.59
18.500	0.00	0.23	0.102	O	|	|	|	|	0.58
18.583	0.00	0.23	0.100	O	|	|	|	|	0.57
18.667	0.00	0.22	0.098	O	|	|	|	|	0.57
18.750	0.00	0.22	0.097	O	|	|	|	|	0.56
18.833	0.00	0.22	0.095	O	|	|	|	|	0.55
18.917	0.00	0.21	0.094	O	|	|	|	|	0.54
19.000	0.00	0.21	0.092	O	|	|	|	|	0.53
19.083	0.00	0.21	0.091	O	|	|	|	|	0.52
19.167	0.00	0.20	0.090	O	|	|	|	|	0.52
19.250	0.00	0.20	0.088	O	|	|	|	|	0.51
19.333	0.00	0.20	0.087	O	|	|	|	|	0.50
19.417	0.00	0.19	0.086	O	|	|	|	|	0.49
19.500	0.00	0.19	0.084	O	|	|	|	|	0.48
19.583	0.00	0.19	0.083	O	|	|	|	|	0.48
19.667	0.00	0.18	0.082	O	|	|	|	|	0.47
19.750	0.00	0.18	0.080	O	|	|	|	|	0.46
19.833	0.00	0.18	0.079	O	|	|	|	|	0.45
19.917	0.00	0.18	0.078	O	|	|	|	|	0.45
20.000	0.00	0.17	0.077	O	|	|	|	|	0.44
20.083	0.00	0.17	0.076	O	|	|	|	|	0.43
20.167	0.00	0.17	0.074	O	|	|	|	|	0.43
20.250	0.00	0.17	0.073	O	|	|	|	|	0.42
20.333	0.00	0.16	0.072	O	|	|	|	|	0.41
20.417	0.00	0.16	0.071	O	|	|	|	|	0.41
20.500	0.00	0.16	0.070	O	|	|	|	|	0.40
20.583	0.00	0.16	0.069	O	|	|	|	|	0.40
20.667	0.00	0.15	0.068	O	|	|	|	|	0.39
20.750	0.00	0.15	0.067	O	|	|	|	|	0.38
20.833	0.00	0.15	0.066	O	|	|	|	|	0.38
20.917	0.00	0.15	0.065	O	|	|	|	|	0.37
21.000	0.00	0.14	0.064	O	|	|	|	|	0.37
21.083	0.00	0.14	0.063	O	|	|	|	|	0.36
21.167	0.00	0.14	0.062	O	|	|	|	|	0.35
21.250	0.00	0.14	0.061	O	|	|	|	|	0.35
21.333	0.00	0.14	0.060	O	|	|	|	|	0.34
21.417	0.00	0.13	0.059	O	|	|	|	|	0.34
21.500	0.00	0.13	0.058	O	|	|	|	|	0.33
21.583	0.00	0.13	0.057	O	|	|	|	|	0.33
21.667	0.00	0.13	0.056	O	|	|	|	|	0.32
21.750	0.00	0.13	0.055	O	|	|	|	|	0.32
21.833	0.00	0.12	0.054	O	|	|	|	|	0.31
21.917	0.00	0.12	0.054	O	|	|	|	|	0.31
22.000	0.00	0.12	0.053	O	|	|	|	|	0.30
22.083	0.00	0.12	0.052	O	|	|	|	|	0.30
22.167	0.00	0.12	0.051	O	|	|	|	|	0.29
22.250	0.00	0.11	0.050	O	|	|	|	|	0.29

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22.333    0.00    0.11      0.050  O       |       |       |       |     0.29
22.417    0.00    0.11      0.049  O       |       |       |       |     0.28
22.500    0.00    0.11      0.048  O       |       |       |       |     0.28
22.583    0.00    0.11      0.047  O       |       |       |       |     0.27
22.667    0.00    0.11      0.047  O       |       |       |       |     0.27
22.750    0.00    0.10      0.046  O       |       |       |       |     0.26
22.833    0.00    0.10      0.045  O       |       |       |       |     0.26
22.917    0.00    0.10      0.045  O       |       |       |       |     0.26
23.000    0.00    0.10      0.044  O       |       |       |       |     0.25

      Remaining water in basin =    0.04 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   276
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        6.676 (CFS)
                   Total volume =       1.443 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      316.100 to Point/Station      316.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    239.75 (Ft.)
      Elevation difference =    3.30 (Ft.)
      Slope of channel =  0.013764 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     1.746(CFS)
      Nearest computed pipe diameter  =      9.00(In.)
      Calculated individual pipe flow  =     1.746(CFS)
      Normal flow depth in pipe =    6.67(In.)
      Flow top width inside pipe =    7.89(In.)
      Critical Depth =    0.61(Ft.)
      Pipe flow velocity =      4.97(Ft/s)
      Travel time through pipe =    0.80 min.


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     6.676(CFS)
      Nearest computed pipe diameter  =     15.00(In.)
      Calculated individual pipe flow  =     6.676(CFS)
      Normal flow depth in pipe =   10.92(In.)
      Flow top width inside pipe =   13.35(In.)
      Critical Depth =    1.04(Ft.)
      Pipe flow velocity =      6.97(Ft/s)
      Travel time through pipe =    0.57 min.
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********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.8039   Travel time =   0.57 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   7.5645
       dt(routing time-step) =   0.46 (min.),   c* =   1.0000

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.7       3.3       5.0       6.7
-----------------------------------------------------------------------
  0+ 5       0.0046      0.01  O         |         |         |         |
  0+10       0.0193      0.02  O         |         |         |         |
  0+15       0.0415      0.04  O         |         |         |         |
  0+20       0.0661      0.07  O         |         |         |         |
  0+25       0.0910      0.09  O         |         |         |         |
  0+30       0.1166      0.12  O         |         |         |         |
  0+35       0.1437      0.15  O         |         |         |         |
  0+40       0.1716      0.17  |O        |         |         |         |
  0+45       0.1993      0.20  |O        |         |         |         |
  0+50       0.2267      0.23  |O        |         |         |         |
  0+55       0.2536      0.26  |O        |         |         |         |
  1+ 0       0.2747      0.28  |O        |         |         |         |
  1+ 5       0.2845      0.29  |O        |         |         |         |
  1+10       0.2872      0.29  |O        |         |         |         |
  1+15       0.2880      0.29  |O        |         |         |         |
  1+20       0.2883      0.29  |O        |         |         |         |
  1+25       0.2885      0.29  |O        |         |         |         |
  1+30       0.2887      0.29  |O        |         |         |         |
  1+35       0.2889      0.29  |O        |         |         |         |
  1+40       0.2891      0.29  |O        |         |         |         |
  1+45       0.2893      0.29  |O        |         |         |         |
  1+50       0.2895      0.29  |O        |         |         |         |
  1+55       0.2897      0.29  |O        |         |         |         |
  2+ 0       0.2911      0.29  |O        |         |         |         |
  2+ 5       0.2938      0.29  |O        |         |         |         |
  2+10       0.2968      0.30  |O        |         |         |         |
  2+15       0.3010      0.30  |O        |         |         |         |
  2+20       0.3065      0.31  |O        |         |         |         |
  2+25       0.3122      0.31  |O        |         |         |         |
  2+30       0.3179      0.32  |O        |         |         |         |
  2+35       0.3235      0.32  |O        |         |         |         |
  2+40       0.3291      0.33  |O        |         |         |         |
  2+45       0.3358      0.34  | O       |         |         |         |
  2+50       0.3449      0.35  | O       |         |         |         |
  2+55       0.3554      0.36  | O       |         |         |         |
  3+ 0       0.3663      0.37  | O       |         |         |         |
  3+ 5       0.3770      0.38  | O       |         |         |         |
  3+10       0.3889      0.39  | O       |         |         |         |
  3+15       0.3928      0.39  | O       |         |         |         |
  3+20       0.3931      0.39  | O       |         |         |         |
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3+25       0.3931      0.39  | O       |         |         |         |
3+30       0.3931      0.39  | O       |         |         |         |
3+35       0.3931      0.39  | O       |         |         |         |
3+40       0.3931      0.39  | O       |         |         |         |
3+45       0.3931      0.39  | O       |         |         |         |
3+50       0.3931      0.39  | O       |         |         |         |
3+55       0.3931      0.39  | O       |         |         |         |
4+ 0       0.3931      0.39  | O       |         |         |         |
4+ 5       0.3931      0.39  | O       |         |         |         |
4+10       0.3931      0.39  | O       |         |         |         |
4+15       0.3931      0.39  | O       |         |         |         |
4+20       0.3931      0.39  | O       |         |         |         |
4+25       0.3931      0.39  | O       |         |         |         |
4+30       0.8506      0.90  |    O    |         |         |         |
4+35       1.4794      1.54  |       OI|         |         |         |
4+40       2.0740      2.13  |         | O       |         |         |
4+45       2.6333      2.68  |         |    OI   |         |         |
4+50       3.1539      3.20  |         |       OI|         |         |
4+55       3.6306      3.67  |         |         |OI       |         |
5+ 0       4.0785      4.12  |         |         |   O     |         |
5+ 5       4.5597      4.60  |         |         |      O  |         |
5+10       5.1662      5.22  |         |         |         OI        |
5+15       5.9166      5.99  |         |         |         |    O    |
5+20       6.6127      6.68  |         |         |         |        OI
5+25       6.6763      6.68  |         |         |         |        OI
5+30       6.6763      6.68  |         |         |         |        OI
5+35       6.6763      6.68  |         |         |         |         O
5+40       6.6763      6.68  |         |         |         |         O
5+45       6.6763      6.68  |         |         |         |         O
5+50       6.6763      6.68  |         |         |         |         O
5+55       6.6763      6.68  |         |         |         |         O
6+ 0       6.6763      6.68  |         |         |         |         O
6+ 5       6.5695      6.56  |         |         |         |        O|
6+10       5.7209      5.64  |         |         |         |  IO     |
6+15       4.8980      4.82  |         |         |      IO|         |
6+20       4.1877      4.12  |         |         |   IO    |         |
6+25       3.5790      3.52  |         |         |O        |         |
6+30       3.0587      3.01  |         |       O |         |         |
6+35       2.6140      2.57  |         |    O    |         |         |
6+40       2.2339      2.20  |         |  O      |         |         |
6+45       1.9091      1.88  |         |O        |         |         |
6+50       1.6316      1.61  |        O|         |         |         |
6+55       1.3944      1.37  |       O |         |         |         |
7+ 0       1.1916      1.17  |      O  |         |         |         |
7+ 5       1.0184      1.00  |     O   |         |         |         |
7+10       0.8703      0.86  |    O    |         |         |         |
7+15       0.7438      0.73  |   O     |         |         |         |
7+20       0.6357      0.63  |  O      |         |         |         |
7+25       0.5432      0.53  |  O      |         |         |         |
7+30       0.4643      0.46  | O       |         |         |         |
7+35       0.3990      0.39  | O       |         |         |         |
7+40       0.3931      0.39  | O       |         |         |         |
7+45       0.3931      0.39  | O       |         |         |         |
7+50       0.3931      0.39  | O       |         |         |         |
7+55       0.3931      0.39  | O       |         |         |         |
8+ 0       0.3931      0.39  | O       |         |         |         |
8+ 5       0.3931      0.39  | O       |         |         |         |
8+10       0.3931      0.39  | O       |         |         |         |
8+15       0.3931      0.39  | O       |         |         |         |
8+20       0.3931      0.39  | O       |         |         |         |
8+25       0.3931      0.39  | O       |         |         |         |
8+30       0.3931      0.39  | O       |         |         |         |
8+35       0.3931      0.39  | O       |         |         |         |
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8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3931	0.39	O				
9+55	0.3931	0.39	O				
10+ 0	0.3931	0.39	O				
10+ 5	0.3931	0.39	O				
10+10	0.3931	0.39	O				
10+15	0.3931	0.39	O				
10+20	0.3931	0.39	O				
10+25	0.3931	0.39	O				
10+30	0.3931	0.39	O				
10+35	0.3931	0.39	O				
10+40	0.3931	0.39	O				
10+45	0.3931	0.39	O				
10+50	0.3931	0.39	O				
10+55	0.3931	0.39	O				
11+ 0	0.3931	0.39	O				
11+ 5	0.3931	0.39	O				
11+10	0.3931	0.39	O				
11+15	0.3931	0.39	O				
11+20	0.3931	0.39	O				
11+25	0.3931	0.39	O				
11+30	0.3931	0.39	O				
11+35	0.3931	0.39	O				
11+40	0.3931	0.39	O				
11+45	0.3931	0.39	O				
11+50	0.3931	0.39	O				
11+55	0.3931	0.39	O				
12+ 0	0.3931	0.39	O				
12+ 5	0.3931	0.39	O				
12+10	0.3931	0.39	O				
12+15	0.3931	0.39	O				
12+20	0.3931	0.39	O				
12+25	0.3931	0.39	O				
12+30	0.3931	0.39	O				
12+35	0.3931	0.39	O				
12+40	0.3931	0.39	O				
12+45	0.3931	0.39	O				
12+50	0.3931	0.39	O				
12+55	0.3931	0.39	O				
13+ 0	0.3931	0.39	O				
13+ 5	0.3931	0.39	O				
13+10	0.3931	0.39	O				
13+15	0.3931	0.39	O				
13+20	0.3931	0.39	O				
13+25	0.3931	0.39	O				
13+30	0.3931	0.39	O				
13+35	0.3931	0.39	O				
13+40	0.3931	0.39	O				
13+45	0.3931	0.39	O				
13+50	0.3931	0.39	O				

13+55	0.3931	0.39	| O	|	|	|	|
14+ 0	0.3931	0.39	| O	|	|	|	|
14+ 5	0.3931	0.39	| O	|	|	|	|
14+10	0.3931	0.39	| O	|	|	|	|
14+15	0.3931	0.39	| O	|	|	|	|
14+20	0.3931	0.39	| O	|	|	|	|
14+25	0.3931	0.39	| O	|	|	|	|
14+30	0.3931	0.39	| O	|	|	|	|
14+35	0.3931	0.39	| O	|	|	|	|
14+40	0.3931	0.39	| O	|	|	|	|
14+45	0.3931	0.39	| O	|	|	|	|
14+50	0.3931	0.39	| O	|	|	|	|
14+55	0.3931	0.39	| O	|	|	|	|
15+ 0	0.3931	0.39	| O	|	|	|	|
15+ 5	0.3931	0.39	| O	|	|	|	|
15+10	0.3931	0.39	| O	|	|	|	|
15+15	0.3931	0.39	| O	|	|	|	|
15+20	0.3931	0.39	| O	|	|	|	|
15+25	0.3931	0.39	| O	|	|	|	|
15+30	0.3931	0.39	| O	|	|	|	|
15+35	0.3931	0.39	| O	|	|	|	|
15+40	0.3896	0.39	| O	|	|	|	|
15+45	0.3838	0.38	| O	|	|	|	|
15+50	0.3779	0.38	| O	|	|	|	|
15+55	0.3720	0.37	| O	|	|	|	|
16+ 0	0.3663	0.37	| O	|	|	|	|
16+ 5	0.3606	0.36	| O	|	|	|	|
16+10	0.3551	0.35	| O	|	|	|	|
16+15	0.3496	0.35	| O	|	|	|	|
16+20	0.3442	0.34	| O	|	|	|	|
16+25	0.3389	0.34	| O	|	|	|	|
16+30	0.3337	0.33	|O	|	|	|	|
16+35	0.3285	0.33	|O	|	|	|	|
16+40	0.3234	0.32	|O	|	|	|	|
16+45	0.3184	0.32	|O	|	|	|	|
16+50	0.3135	0.31	|O	|	|	|	|
16+55	0.3087	0.31	|O	|	|	|	|
17+ 0	0.3039	0.30	|O	|	|	|	|
17+ 5	0.2992	0.30	|O	|	|	|	|
17+10	0.2946	0.29	|O	|	|	|	|
17+15	0.2901	0.29	|O	|	|	|	|
17+20	0.2856	0.29	|O	|	|	|	|
17+25	0.2812	0.28	|O	|	|	|	|
17+30	0.2768	0.28	|O	|	|	|	|
17+35	0.2726	0.27	|O	|	|	|	|
17+40	0.2683	0.27	|O	|	|	|	|
17+45	0.2642	0.26	|O	|	|	|	|
17+50	0.2601	0.26	|O	|	|	|	|
17+55	0.2561	0.26	|O	|	|	|	|
18+ 0	0.2522	0.25	|O	|	|	|	|
18+ 5	0.2483	0.25	|O	|	|	|	|
18+10	0.2444	0.24	|O	|	|	|	|
18+15	0.2407	0.24	|O	|	|	|	|
18+20	0.2369	0.24	|O	|	|	|	|
18+25	0.2333	0.23	|O	|	|	|	|
18+30	0.2297	0.23	|O	|	|	|	|
18+35	0.2261	0.23	|O	|	|	|	|
18+40	0.2226	0.22	|O	|	|	|	|
18+45	0.2192	0.22	|O	|	|	|	|
18+50	0.2158	0.22	|O	|	|	|	|
18+55	0.2125	0.21	|O	|	|	|	|
19+ 0	0.2092	0.21	|O	|	|	|	|
19+ 5	0.2060	0.21	|O	|	|	|	|

```
 19+10       0.2028      0.20  |O        |         |         |         |
 19+15       0.1997      0.20  |O        |         |         |         |
 19+20       0.1966      0.20  |O        |         |         |         |
 19+25       0.1936      0.19  |O        |         |         |         |
 19+30       0.1906      0.19  |O        |         |         |         |
 19+35       0.1876      0.19  |O        |         |         |         |
 19+40       0.1847      0.18  |O        |         |         |         |
 19+45       0.1819      0.18  |O        |         |         |         |
 19+50       0.1791      0.18  |O        |         |         |         |
 19+55       0.1763      0.18  |O        |         |         |         |
 20+ 0       0.1736      0.17  |O        |         |         |         |
 20+ 5       0.1709      0.17  |O        |         |         |         |
 20+10       0.1683      0.17  |O        |         |         |         |
 20+15       0.1657      0.17  O         |         |         |         |
 20+20       0.1631      0.16  O         |         |         |         |
 20+25       0.1606      0.16  O         |         |         |         |
 20+30       0.1581      0.16  O         |         |         |         |
 20+35       0.1557      0.16  O         |         |         |         |
 20+40       0.1533      0.15  O         |         |         |         |
 20+45       0.1509      0.15  O         |         |         |         |
 20+50       0.1486      0.15  O         |         |         |         |
 20+55       0.1463      0.15  O         |         |         |         |
 21+ 0       0.1440      0.14  O         |         |         |         |
 21+ 5       0.1418      0.14  O         |         |         |         |
 21+10       0.1396      0.14  O         |         |         |         |
 21+15       0.1375      0.14  O         |         |         |         |
 21+20       0.1353      0.14  O         |         |         |         |
 21+25       0.1332      0.13  O         |         |         |         |
 21+30       0.1312      0.13  O         |         |         |         |
 21+35       0.1292      0.13  O         |         |         |         |
 21+40       0.1272      0.13  O         |         |         |         |
 21+45       0.1252      0.13  O         |         |         |         |
 21+50       0.1233      0.12  O         |         |         |         |
 21+55       0.1214      0.12  O         |         |         |         |
 22+ 0       0.1195      0.12  O         |         |         |         |
 22+ 5       0.1176      0.12  O         |         |         |         |
 22+10       0.1158      0.12  O         |         |         |         |
 22+15       0.1140      0.11  O         |         |         |         |
 22+20       0.1123      0.11  O         |         |         |         |
 22+25       0.1106      0.11  O         |         |         |         |
 22+30       0.1088      0.11  O         |         |         |         |
 22+35       0.1072      0.11  O         |         |         |         |
 22+40       0.1055      0.11  O         |         |         |         |
 22+45       0.1039      0.10  O         |         |         |         |
 22+50       0.1023      0.10  O         |         |         |         |
 22+55       0.1007      0.10  O         |         |         |         |
 23+ 0       0.0991      0.10  O         |         |         |         |
 23+ 5       0.0091      0.00  O         |         |         |         |
 23+10       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =   278
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        6.676 (CFS)
                 Total volume =       1.443 (Ac.Ft)
           Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.100 to Point/Station      316.200
**** STORE OR DELETE CURRENT HYDROGRAPH ****
______________________________________________________________________
Current stream hydrograph saved in file 27259PONDC106.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =     0
             Time interval =    0.0 (Min.)
             Maximum/Peak flow rate =        0.000 (CFS)
             Total volume =       0.000 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

----------------------------------------------------------------------
```

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/31/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA C (Pond C)- Q10yr24hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHC2410.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =   291
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        4.635 (CFS)
             Total volume =       2.305 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.000 to Point/Station      316.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

```
CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    5.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   5.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.00(Ft.)    Capacity =   6.28(CFS)

Total outflow at this depth =      6.68(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.00(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

Total outflow at this depth =     16.67(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    6.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
```

```
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   6.50(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   1.00(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.50(Ft.)    Capacity =   6.28(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     20.81(CFS)

-------------------------------------------------------------------
Total number of inflow hydrograph intervals = 291
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
-------------------------------------------------------------------
-------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
-------------------------------------------------------------------
-------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
-------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.174      0.393      0.173        0.175
   3.000      0.435      0.393      0.434        0.436
   4.000      0.711      6.676      0.688        0.734
   5.000      1.081      6.676      1.058        1.104
   6.000      1.367     16.673      1.310        1.424
   6.500      1.475     20.813      1.403        1.547
-------------------------------------------------------------------
              Hydrograph Detention Basin Routing
-------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                        Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       1.2    2.32    3.48    4.63 (Ft.)
 0.083    0.14    0.00      0.000  O       |       |       |       |     0.00
 0.167    0.27    0.00      0.002  OI      |       |       |       |     0.01
 0.250    0.29    0.01      0.004  O I     |       |       |       |     0.02
 0.333    0.38    0.01      0.006  O I     |       |       |       |     0.03
 0.417    0.44    0.02      0.009  O  I    |       |       |       |     0.05
 0.500    0.45    0.03      0.012  O  I    |       |       |       |     0.07
 0.583    0.46    0.03      0.015  O  I    |       |       |       |     0.08
 0.667    0.46    0.04      0.017  O  I    |       |       |       |     0.10
 0.750    0.46    0.05      0.020  O  I    |       |       |       |     0.12
 0.833    0.53    0.05      0.023  O  I    |       |       |       |     0.13
 0.917    0.59    0.06      0.027  O   I   |       |       |       |     0.15
 1.000    0.60    0.07      0.030  O   I   |       |       |       |     0.18
 1.083    0.54    0.08      0.034  O  I    |       |       |       |     0.19
 1.167    0.47    0.08      0.037  O  I    |       |       |       |     0.21
 1.250    0.46    0.09      0.039  O  I    |       |       |       |     0.23
```

```
1.333    0.46    0.09      0.042  O  I    |        |        |        |     0.24
1.417    0.46    0.10      0.044  O  I    |        |        |        |     0.26
1.500    0.46    0.11      0.047  O  I    |        |        |        |     0.27
1.583    0.46    0.11      0.049  O  I    |        |        |        |     0.28
1.667    0.46    0.12      0.052  O  I    |        |        |        |     0.30
1.750    0.46    0.12      0.054  O  I    |        |        |        |     0.31
1.833    0.53    0.13      0.057  O  I    |        |        |        |     0.32
1.917    0.59    0.13      0.059  O   I   |        |        |        |     0.34
2.000    0.60    0.14      0.063  O   I   |        |        |        |     0.36
2.083    0.61    0.15      0.066  |O  I   |        |        |        |     0.38
2.167    0.61    0.16      0.069  |O  I   |        |        |        |     0.40
2.250    0.61    0.16      0.072  |O  I   |        |        |        |     0.41
2.333    0.61    0.17      0.075  |O  I   |        |        |        |     0.43
2.417    0.61    0.18      0.078  |O  I   |        |        |        |     0.45
2.500    0.61    0.18      0.081  |O  I   |        |        |        |     0.47
2.583    0.68    0.19      0.084  |O  I   |        |        |        |     0.48
2.667    0.74    0.20      0.088  |O   I  |        |        |        |     0.50
2.750    0.76    0.21      0.092  |O   I  |        |        |        |     0.53
2.833    0.76    0.22      0.095  |O   I  |        |        |        |     0.55
2.917    0.76    0.22      0.099  |O   I  |        |        |        |     0.57
3.000    0.76    0.23      0.103  |O   I  |        |        |        |     0.59
3.083    0.76    0.24      0.106  |O   I  |        |        |        |     0.61
3.167    0.76    0.25      0.110  |O   I  |        |        |        |     0.63
3.250    0.76    0.26      0.113  |O   I  |        |        |        |     0.65
3.333    0.76    0.26      0.117  |O   I  |        |        |        |     0.67
3.417    0.76    0.27      0.120  |O   I  |        |        |        |     0.69
3.500    0.76    0.28      0.124  |O   I  |        |        |        |     0.71
3.583    0.76    0.29      0.127  |O   I  |        |        |        |     0.73
3.667    0.76    0.29      0.130  | O  I  |        |        |        |     0.75
3.750    0.76    0.30      0.133  | O  I  |        |        |        |     0.77
3.833    0.83    0.31      0.137  | O  I  |        |        |        |     0.79
3.917    0.90    0.32      0.141  | O   I |        |        |        |     0.81
4.000    0.91    0.33      0.145  | O   I |        |        |        |     0.83
4.083    0.91    0.34      0.149  | O   I |        |        |        |     0.85
4.167    0.91    0.34      0.152  | O   I |        |        |        |     0.88
4.250    0.91    0.35      0.156  | O   I |        |        |        |     0.90
4.333    0.98    0.36      0.160  | O   I |        |        |        |     0.92
4.417    1.05    0.37      0.165  | O    I|        |        |        |     0.95
4.500    1.06    0.38      0.170  | O    I|        |        |        |     0.97
4.583    1.07    0.39      0.174  | O    I|        |        |        |     1.00
4.667    1.07    0.39      0.179  | O    I|        |        |        |     1.04
4.750    1.07    0.39      0.183  | O    I|        |        |        |     1.07
4.833    1.14    0.39      0.188  | O    I|        |        |        |     1.11
4.917    1.20    0.39      0.194  | O     I        |        |        |     1.15
5.000    1.21    0.39      0.199  | O     I        |        |        |     1.19
5.083    1.08    0.39      0.204  | O    I|        |        |        |     1.23
5.167    0.95    0.39      0.209  | O   I |        |        |        |     1.27
5.250    0.92    0.39      0.212  | O   I |        |        |        |     1.29
5.333    0.98    0.39      0.216  | O   I |        |        |        |     1.32
5.417    1.05    0.39      0.221  | O    I|        |        |        |     1.36
5.500    1.06    0.39      0.225  | O    I|        |        |        |     1.39
5.583    1.14    0.39      0.230  | O    I|        |        |        |     1.43
5.667    1.20    0.39      0.235  | O     I        |        |        |     1.47
5.750    1.21    0.39      0.241  | O     I        |        |        |     1.51
5.833    1.22    0.39      0.247  | O     I        |        |        |     1.56
5.917    1.22    0.39      0.252  | O     I        |        |        |     1.60
6.000    1.22    0.39      0.258  | O     I        |        |        |     1.64
6.083    1.29    0.39      0.264  | O     I        |        |        |     1.69
6.167    1.35    0.39      0.270  | O     |I       |        |        |     1.74
6.250    1.37    0.39      0.277  | O     |I       |        |        |     1.79
6.333    1.37    0.39      0.284  | O     |I       |        |        |     1.84
6.417    1.37    0.39      0.290  | O     |I       |        |        |     1.89
6.500    1.37    0.39      0.297  | O     |I       |        |        |     1.94
```

6.583	1.44	0.39	0.304	O	I			2.00
6.667	1.51	0.39	0.312	O	I			2.05
6.750	1.52	0.39	0.319	O	I			2.11
6.833	1.52	0.39	0.327	O	I			2.17
6.917	1.52	0.39	0.335	O	I			2.23
7.000	1.52	0.39	0.343	O	I			2.29
7.083	1.52	0.39	0.350	O	I			2.35
7.167	1.52	0.39	0.358	O	I			2.41
7.250	1.52	0.39	0.366	O	I			2.47
7.333	1.59	0.39	0.374	O	I			2.53
7.417	1.66	0.39	0.382	O	I			2.60
7.500	1.67	0.39	0.391	O	I			2.66
7.583	1.75	0.39	0.400	O	I			2.73
7.667	1.81	0.39	0.410	O	I			2.81
7.750	1.82	0.39	0.420	O	I			2.88
7.833	1.90	0.39	0.430	O	I			2.96
7.917	1.96	0.50	0.440	O	I			3.02
8.000	1.97	0.72	0.449	O	I			3.05
8.083	2.12	0.91	0.458	O	I			3.08
8.167	2.25	1.10	0.466	O	I			3.11
8.250	2.27	1.26	0.473	O	I			3.14
8.333	2.28	1.41	0.480	O	I			3.16
8.417	2.28	1.54	0.485	O	I			3.18
8.500	2.28	1.65	0.490	O	I			3.20
8.583	1.28	1.67	0.491	I O				3.20
8.667	0.39	1.55	0.486	I O				3.18
8.750	0.24	1.37	0.478	I O				3.16
8.833	0.28	1.21	0.471	I O				3.13
8.917	0.38	1.08	0.465	I O				3.11
9.000	0.41	0.98	0.461	I O				3.09
9.083	0.62	0.91	0.458	I O				3.08
9.167	0.81	0.88	0.457	IO				3.08
9.250	0.86	0.88	0.456	IO				3.08
9.333	0.98	0.88	0.457	O				3.08
9.417	1.08	0.90	0.457	OI				3.08
9.500	1.11	0.93	0.459	OI				3.09
9.583	1.23	0.97	0.460	O I				3.09
9.667	1.33	1.01	0.462	O I				3.10
9.750	1.36	1.06	0.464	O I				3.11
9.833	1.48	1.11	0.467	O I				3.11
9.917	1.58	1.17	0.469	O I				3.12
10.000	1.61	1.24	0.472	O I				3.13
10.083	0.96	1.24	0.472	I O				3.14
10.167	0.37	1.16	0.469	I O				3.12
10.250	0.27	1.04	0.463	I O				3.10
10.333	0.23	0.92	0.458	I O				3.08
10.417	0.25	0.82	0.454	I O				3.07
10.500	0.26	0.74	0.450	I O				3.06
10.583	0.76	0.71	0.449	OI				3.05
10.667	1.20	0.75	0.450	O I				3.06
10.750	1.30	0.82	0.454	O I				3.07
10.833	1.34	0.89	0.457	O I				3.08
10.917	1.36	0.96	0.460	O I				3.09
11.000	1.37	1.02	0.462	O I				3.10
11.083	1.29	1.06	0.464	OI				3.11
11.167	1.22	1.09	0.466	OI				3.11
11.250	1.21	1.11	0.466	OI				3.11
11.333	1.22	1.12	0.467	OI				3.12
11.417	1.23	1.14	0.468	OI				3.12
11.500	1.25	1.15	0.468	OI				3.12
11.583	1.07	1.15	0.468	O				3.12
11.667	0.91	1.13	0.467	IO				3.12
11.750	0.89	1.10	0.466	IO				3.11

11.833	0.98	1.07	0.465	IO				3.11
11.917	1.08	1.07	0.465	O				3.11
12.000	1.11	1.07	0.465	O				3.11
12.083	1.81	1.13	0.467	O	I			3.12
12.167	2.42	1.27	0.474	O	I			3.14
12.250	2.55	1.45	0.481	O	I			3.17
12.333	2.71	1.62	0.489	O	I			3.20
12.417	2.81	1.78	0.496	O	I			3.22
12.500	2.83	1.93	0.503	O	I			3.25
12.583	3.05	2.08	0.509	O	I			3.27
12.667	3.23	2.23	0.516	O	I			3.29
12.750	3.28	2.38	0.522	O	I			3.32
12.833	3.40	2.52	0.529	O	I			3.34
12.917	3.50	2.66	0.534	O	I			3.36
13.000	3.53	2.78	0.540	O	I			3.38
13.083	4.03	2.93	0.546	O	I			3.40
13.167	4.47	3.12	0.555	O	I			3.43
13.250	4.56	3.32	0.564	O	I			3.47
13.333	4.61	3.51	0.572	O	I			3.50
13.417	4.62	3.67	0.579	O	I			3.52
13.500	4.63	3.81	0.585	O	I			3.54
13.583	3.59	3.85	0.587	O	I			3.55
13.667	2.65	3.74	0.582	O	I			3.53
13.750	2.48	3.57	0.575	O	I			3.51
13.833	2.42	3.41	0.568	O	I			3.48
13.917	2.43	3.27	0.561	O	I			3.46
14.000	2.44	3.15	0.556	O	I			3.44
14.083	2.84	3.07	0.553	O	I			3.43
14.167	3.20	3.06	0.552	O	I			3.43
14.250	3.27	3.09	0.553	O	I			3.43
14.333	3.22	3.11	0.554	O	I			3.43
14.417	3.14	3.12	0.555	O	I			3.43
14.500	3.14	3.12	0.555	O	I			3.43
14.583	3.14	3.13	0.555	O	I			3.44
14.667	3.15	3.13	0.555	O	I			3.44
14.750	3.16	3.13	0.555	O	I			3.44
14.833	3.08	3.13	0.555	O	I			3.44
14.917	3.00	3.12	0.555	O	I			3.43
15.000	3.00	3.10	0.554	O	I			3.43
15.083	2.91	3.08	0.553	O	I			3.43
15.167	2.83	3.05	0.552	O	I			3.42
15.250	2.83	3.02	0.550	O	I			3.42
15.333	2.73	2.98	0.549	O	I			3.41
15.417	2.66	2.94	0.547	O	I			3.41
15.500	2.65	2.90	0.545	O	I			3.40
15.583	2.27	2.84	0.542	O	I			3.39
15.667	1.94	2.73	0.538	O	I			3.37
15.750	1.88	2.61	0.532	O	I			3.35
15.833	1.86	2.50	0.528	O	I			3.34
15.917	1.88	2.41	0.524	O	I			3.32
16.000	1.89	2.33	0.520	O	I			3.31
16.083	1.29	2.23	0.515	O	I			3.29
16.167	0.75	2.05	0.508	O	I			3.26
16.250	0.65	1.85	0.499	O	I			3.23
16.333	0.61	1.68	0.491	O	I			3.20
16.417	0.61	1.52	0.485	O	I			3.18
16.500	0.61	1.39	0.479	O	I			3.16
16.583	0.54	1.27	0.474	O	I			3.14
16.667	0.47	1.16	0.469	O	I			3.12
16.750	0.46	1.06	0.464	O	I			3.11
16.833	0.46	0.97	0.460	O	I			3.09
16.917	0.46	0.90	0.457	O	I			3.08
17.000	0.46	0.83	0.454	O	I			3.07

17.083	0.60	0.79	0.452	IO				3.06
17.167	0.73	0.77	0.452	O				3.06
17.250	0.75	0.77	0.451	O				3.06
17.333	0.76	0.76	0.451	O				3.06
17.417	0.76	0.76	0.451	O				3.06
17.500	0.76	0.76	0.451	O				3.06
17.583	0.76	0.76	0.451	O				3.06
17.667	0.76	0.76	0.451	O				3.06
17.750	0.76	0.76	0.451	O				3.06
17.833	0.69	0.76	0.451	IO				3.06
17.917	0.63	0.74	0.450	IO				3.06
18.000	0.61	0.72	0.450	IO				3.05
18.083	0.61	0.71	0.449	O				3.05
18.167	0.61	0.69	0.448	O				3.05
18.250	0.61	0.68	0.448	O				3.05
18.333	0.61	0.67	0.447	O				3.04
18.417	0.61	0.66	0.447	O				3.04
18.500	0.61	0.65	0.446	O				3.04
18.583	0.54	0.64	0.446	IO				3.04
18.667	0.47	0.62	0.445	IO				3.04
18.750	0.46	0.60	0.444	IO				3.03
18.833	0.39	0.57	0.443	IO				3.03
18.917	0.32	0.54	0.442	IO				3.02
19.000	0.31	0.51	0.440	IO				3.02
19.083	0.38	0.49	0.439	IO				3.01
19.167	0.44	0.47	0.439	O				3.01
19.250	0.45	0.47	0.438	O				3.01
19.333	0.53	0.47	0.438	O				3.01
19.417	0.59	0.49	0.439	OI				3.01
19.500	0.60	0.50	0.440	OI				3.02
19.583	0.54	0.51	0.440	O				3.02
19.667	0.47	0.51	0.440	O				3.02
19.750	0.46	0.50	0.440	O				3.02
19.833	0.39	0.49	0.439	IO				3.02
19.917	0.32	0.47	0.438	IO				3.01
20.000	0.31	0.45	0.437	IO				3.01
20.083	0.38	0.43	0.437	O				3.01
20.167	0.44	0.43	0.437	OI				3.01
20.250	0.45	0.43	0.437	OI				3.01
20.333	0.46	0.44	0.437	O				3.01
20.417	0.46	0.44	0.437	O				3.01
20.500	0.46	0.44	0.437	O				3.01
20.583	0.46	0.44	0.437	O				3.01
20.667	0.46	0.45	0.437	O				3.01
20.750	0.46	0.45	0.437	O				3.01
20.833	0.39	0.44	0.437	IO				3.01
20.917	0.32	0.43	0.437	O				3.01
21.000	0.31	0.41	0.436	O				3.00
21.083	0.38	0.40	0.435	O				3.00
21.167	0.44	0.40	0.435	OI				3.00
21.250	0.45	0.41	0.436	OI				3.00
21.333	0.39	0.41	0.436	O				3.00
21.417	0.32	0.40	0.435	O				3.00
21.500	0.31	0.39	0.435	O				3.00
21.583	0.38	0.39	0.435	O				3.00
21.667	0.44	0.39	0.435	OI				3.00
21.750	0.45	0.39	0.435	OI				3.00
21.833	0.39	0.40	0.435	O				3.00
21.917	0.32	0.39	0.435	O				3.00
22.000	0.31	0.39	0.434	O				2.99
22.083	0.38	0.39	0.434	O				2.99
22.167	0.44	0.39	0.434	OI				2.99
22.250	0.45	0.39	0.434	OI				3.00

22.333	0.39	0.39	0.435	| O	|	|	|	|	3.00
22.417	0.32	0.39	0.434	| O	|	|	|	|	2.99
22.500	0.31	0.39	0.434	| O	|	|	|	|	2.99
22.583	0.30	0.39	0.433	| O	|	|	|	|	2.99
22.667	0.30	0.39	0.433	| O	|	|	|	|	2.98
22.750	0.30	0.39	0.432	| O	|	|	|	|	2.98
22.833	0.30	0.39	0.431	| O	|	|	|	|	2.97
22.917	0.30	0.39	0.431	| O	|	|	|	|	2.97
23.000	0.30	0.39	0.430	| O	|	|	|	|	2.96
23.083	0.30	0.39	0.430	| O	|	|	|	|	2.96
23.167	0.30	0.39	0.429	| O	|	|	|	|	2.95
23.250	0.30	0.39	0.428	| O	|	|	|	|	2.95
23.333	0.30	0.39	0.428	| O	|	|	|	|	2.94
23.417	0.30	0.39	0.427	| O	|	|	|	|	2.94
23.500	0.30	0.39	0.426	| O	|	|	|	|	2.93
23.583	0.30	0.39	0.426	| O	|	|	|	|	2.93
23.667	0.30	0.39	0.425	| O	|	|	|	|	2.93
23.750	0.30	0.39	0.425	| O	|	|	|	|	2.92
23.833	0.30	0.39	0.424	| O	|	|	|	|	2.92
23.917	0.30	0.39	0.423	| O	|	|	|	|	2.91
24.000	0.30	0.39	0.423	| O	|	|	|	|	2.91
24.083	0.16	0.39	0.422	|IO	|	|	|	|	2.90
24.167	0.03	0.39	0.420	I O	|	|	|	|	2.88
24.250	0.01	0.39	0.417	I O	|	|	|	|	2.86
24.333	0.00	0.39	0.414	I O	|	|	|	|	2.84
24.417	0.00	0.39	0.412	I O	|	|	|	|	2.82
24.500	0.00	0.39	0.409	I O	|	|	|	|	2.80
24.583	0.00	0.39	0.406	I O	|	|	|	|	2.78
24.667	0.00	0.39	0.404	I O	|	|	|	|	2.76
24.750	0.00	0.39	0.401	I O	|	|	|	|	2.74
24.833	0.00	0.39	0.398	I O	|	|	|	|	2.72
24.917	0.00	0.39	0.396	I O	|	|	|	|	2.70
25.000	0.00	0.39	0.393	I O	|	|	|	|	2.68
25.083	0.00	0.39	0.390	I O	|	|	|	|	2.66
25.167	0.00	0.39	0.387	I O	|	|	|	|	2.64
25.250	0.00	0.39	0.385	I O	|	|	|	|	2.61
25.333	0.00	0.39	0.382	I O	|	|	|	|	2.59
25.417	0.00	0.39	0.379	I O	|	|	|	|	2.57
25.500	0.00	0.39	0.377	I O	|	|	|	|	2.55
25.583	0.00	0.39	0.374	I O	|	|	|	|	2.53
25.667	0.00	0.39	0.371	I O	|	|	|	|	2.51
25.750	0.00	0.39	0.368	I O	|	|	|	|	2.49
25.833	0.00	0.39	0.366	I O	|	|	|	|	2.47
25.917	0.00	0.39	0.363	I O	|	|	|	|	2.45
26.000	0.00	0.39	0.360	I O	|	|	|	|	2.43
26.083	0.00	0.39	0.358	I O	|	|	|	|	2.41
26.167	0.00	0.39	0.355	I O	|	|	|	|	2.39
26.250	0.00	0.39	0.352	I O	|	|	|	|	2.37
26.333	0.00	0.39	0.350	I O	|	|	|	|	2.34
26.417	0.00	0.39	0.347	I O	|	|	|	|	2.32
26.500	0.00	0.39	0.344	I O	|	|	|	|	2.30
26.583	0.00	0.39	0.341	I O	|	|	|	|	2.28
26.667	0.00	0.39	0.339	I O	|	|	|	|	2.26
26.750	0.00	0.39	0.336	I O	|	|	|	|	2.24
26.833	0.00	0.39	0.333	I O	|	|	|	|	2.22
26.917	0.00	0.39	0.331	I O	|	|	|	|	2.20
27.000	0.00	0.39	0.328	I O	|	|	|	|	2.18
27.083	0.00	0.39	0.325	I O	|	|	|	|	2.16
27.167	0.00	0.39	0.322	I O	|	|	|	|	2.14
27.250	0.00	0.39	0.320	I O	|	|	|	|	2.12
27.333	0.00	0.39	0.317	I O	|	|	|	|	2.10
27.417	0.00	0.39	0.314	I O	|	|	|	|	2.08
27.500	0.00	0.39	0.312	I O	|	|	|	|	2.05

27.583	0.00	0.39	0.309	I O	|	|	|	|	2.03
27.667	0.00	0.39	0.306	I O	|	|	|	|	2.01
27.750	0.00	0.39	0.303	I O	|	|	|	|	1.99
27.833	0.00	0.39	0.301	I O	|	|	|	|	1.97
27.917	0.00	0.39	0.298	I O	|	|	|	|	1.95
28.000	0.00	0.39	0.295	I O	|	|	|	|	1.93
28.083	0.00	0.39	0.293	I O	|	|	|	|	1.91
28.167	0.00	0.39	0.290	I O	|	|	|	|	1.89
28.250	0.00	0.39	0.287	I O	|	|	|	|	1.87
28.333	0.00	0.39	0.285	I O	|	|	|	|	1.85
28.417	0.00	0.39	0.282	I O	|	|	|	|	1.83
28.500	0.00	0.39	0.279	I O	|	|	|	|	1.81
28.583	0.00	0.39	0.276	I O	|	|	|	|	1.78
28.667	0.00	0.39	0.274	I O	|	|	|	|	1.76
28.750	0.00	0.39	0.271	I O	|	|	|	|	1.74
28.833	0.00	0.39	0.268	I O	|	|	|	|	1.72
28.917	0.00	0.39	0.266	I O	|	|	|	|	1.70
29.000	0.00	0.39	0.263	I O	|	|	|	|	1.68
29.083	0.00	0.39	0.260	I O	|	|	|	|	1.66
29.167	0.00	0.39	0.257	I O	|	|	|	|	1.64
29.250	0.00	0.39	0.255	I O	|	|	|	|	1.62
29.333	0.00	0.39	0.252	I O	|	|	|	|	1.60
29.417	0.00	0.39	0.249	I O	|	|	|	|	1.58
29.500	0.00	0.39	0.247	I O	|	|	|	|	1.56
29.583	0.00	0.39	0.244	I O	|	|	|	|	1.54
29.667	0.00	0.39	0.241	I O	|	|	|	|	1.52
29.750	0.00	0.39	0.239	I O	|	|	|	|	1.49
29.833	0.00	0.39	0.236	I O	|	|	|	|	1.47
29.917	0.00	0.39	0.233	I O	|	|	|	|	1.45
30.000	0.00	0.39	0.230	I O	|	|	|	|	1.43
30.083	0.00	0.39	0.228	I O	|	|	|	|	1.41
30.167	0.00	0.39	0.225	I O	|	|	|	|	1.39
30.250	0.00	0.39	0.222	I O	|	|	|	|	1.37
30.333	0.00	0.39	0.220	I O	|	|	|	|	1.35
30.417	0.00	0.39	0.217	I O	|	|	|	|	1.33
30.500	0.00	0.39	0.214	I O	|	|	|	|	1.31
30.583	0.00	0.39	0.211	I O	|	|	|	|	1.29
30.667	0.00	0.39	0.209	I O	|	|	|	|	1.27
30.750	0.00	0.39	0.206	I O	|	|	|	|	1.25
30.833	0.00	0.39	0.203	I O	|	|	|	|	1.22
30.917	0.00	0.39	0.201	I O	|	|	|	|	1.20
31.000	0.00	0.39	0.198	I O	|	|	|	|	1.18
31.083	0.00	0.39	0.195	I O	|	|	|	|	1.16
31.167	0.00	0.39	0.192	I O	|	|	|	|	1.14
31.250	0.00	0.39	0.190	I O	|	|	|	|	1.12
31.333	0.00	0.39	0.187	I O	|	|	|	|	1.10
31.417	0.00	0.39	0.184	I O	|	|	|	|	1.08
31.500	0.00	0.39	0.182	I O	|	|	|	|	1.06
31.583	0.00	0.39	0.179	I O	|	|	|	|	1.04
31.667	0.00	0.39	0.176	I O	|	|	|	|	1.02
31.750	0.00	0.39	0.174	I O	|	|	|	|	1.00
31.833	0.00	0.39	0.171	I O	|	|	|	|	0.98
31.917	0.00	0.38	0.168	I O	|	|	|	|	0.97
32.000	0.00	0.37	0.166	I O	|	|	|	|	0.95
32.083	0.00	0.37	0.163	I O	|	|	|	|	0.94
32.167	0.00	0.36	0.161	I O	|	|	|	|	0.92
32.250	0.00	0.36	0.158	I O	|	|	|	|	0.91
32.333	0.00	0.35	0.156	I O	|	|	|	|	0.89
32.417	0.00	0.35	0.153	I O	|	|	|	|	0.88
32.500	0.00	0.34	0.151	I O	|	|	|	|	0.87
32.583	0.00	0.34	0.149	I O	|	|	|	|	0.85
32.667	0.00	0.33	0.146	I O	|	|	|	|	0.84
32.750	0.00	0.33	0.144	I O	|	|	|	|	0.83

32.833	0.00	0.32	0.142	I O	|	|	|	|	0.81
32.917	0.00	0.32	0.140	I O	|	|	|	|	0.80
33.000	0.00	0.31	0.137	I O	|	|	|	|	0.79
33.083	0.00	0.31	0.135	I O	|	|	|	|	0.78
33.167	0.00	0.30	0.133	I O	|	|	|	|	0.77
33.250	0.00	0.30	0.131	I O	|	|	|	|	0.75
33.333	0.00	0.29	0.129	I O	|	|	|	|	0.74
33.417	0.00	0.29	0.127	IO	|	|	|	|	0.73
33.500	0.00	0.28	0.125	IO	|	|	|	|	0.72
33.583	0.00	0.28	0.123	IO	|	|	|	|	0.71
33.667	0.00	0.27	0.121	IO	|	|	|	|	0.70
33.750	0.00	0.27	0.119	IO	|	|	|	|	0.69
33.833	0.00	0.27	0.118	IO	|	|	|	|	0.68
33.917	0.00	0.26	0.116	IO	|	|	|	|	0.67
34.000	0.00	0.26	0.114	IO	|	|	|	|	0.66
34.083	0.00	0.25	0.112	IO	|	|	|	|	0.65
34.167	0.00	0.25	0.111	IO	|	|	|	|	0.64
34.250	0.00	0.25	0.109	IO	|	|	|	|	0.63
34.333	0.00	0.24	0.107	IO	|	|	|	|	0.62
34.417	0.00	0.24	0.105	IO	|	|	|	|	0.61
34.500	0.00	0.23	0.104	IO	|	|	|	|	0.60
34.583	0.00	0.23	0.102	IO	|	|	|	|	0.59
34.667	0.00	0.23	0.101	IO	|	|	|	|	0.58
34.750	0.00	0.22	0.099	IO	|	|	|	|	0.57
34.833	0.00	0.22	0.098	IO	|	|	|	|	0.56
34.917	0.00	0.22	0.096	IO	|	|	|	|	0.55
35.000	0.00	0.21	0.095	IO	|	|	|	|	0.54
35.083	0.00	0.21	0.093	IO	|	|	|	|	0.54
35.167	0.00	0.21	0.092	IO	|	|	|	|	0.53
35.250	0.00	0.20	0.090	IO	|	|	|	|	0.52
35.333	0.00	0.20	0.089	IO	|	|	|	|	0.51
35.417	0.00	0.20	0.088	IO	|	|	|	|	0.50
35.500	0.00	0.19	0.086	IO	|	|	|	|	0.50
35.583	0.00	0.19	0.085	IO	|	|	|	|	0.49
35.667	0.00	0.19	0.084	IO	|	|	|	|	0.48
35.750	0.00	0.19	0.082	IO	|	|	|	|	0.47
35.833	0.00	0.18	0.081	IO	|	|	|	|	0.47
35.917	0.00	0.18	0.080	IO	|	|	|	|	0.46
36.000	0.00	0.18	0.078	IO	|	|	|	|	0.45
36.083	0.00	0.17	0.077	IO	|	|	|	|	0.44
36.167	0.00	0.17	0.076	IO	|	|	|	|	0.44
36.250	0.00	0.17	0.075	IO	|	|	|	|	0.43
36.333	0.00	0.17	0.074	IO	|	|	|	|	0.42
36.417	0.00	0.16	0.073	IO	|	|	|	|	0.42
36.500	0.00	0.16	0.071	IO	|	|	|	|	0.41
36.583	0.00	0.16	0.070	IO	|	|	|	|	0.40
36.667	0.00	0.16	0.069	IO	|	|	|	|	0.40
36.750	0.00	0.15	0.068	IO	|	|	|	|	0.39
36.833	0.00	0.15	0.067	IO	|	|	|	|	0.39
36.917	0.00	0.15	0.066	IO	|	|	|	|	0.38
37.000	0.00	0.15	0.065	IO	|	|	|	|	0.37
37.083	0.00	0.14	0.064	IO	|	|	|	|	0.37
37.167	0.00	0.14	0.063	O	|	|	|	|	0.36
37.250	0.00	0.14	0.062	O	|	|	|	|	0.36
37.333	0.00	0.14	0.061	O	|	|	|	|	0.35
37.417	0.00	0.14	0.060	O	|	|	|	|	0.35
37.500	0.00	0.13	0.059	O	|	|	|	|	0.34
37.583	0.00	0.13	0.058	O	|	|	|	|	0.34
37.667	0.00	0.13	0.058	O	|	|	|	|	0.33
37.750	0.00	0.13	0.057	O	|	|	|	|	0.33
37.833	0.00	0.13	0.056	O	|	|	|	|	0.32
37.917	0.00	0.12	0.055	O	|	|	|	|	0.32
38.000	0.00	0.12	0.054	O	|	|	|	|	0.31

```
38.083    0.00    0.12      0.053  O       |       |       |       |     0.31
38.167    0.00    0.12      0.052  O       |       |       |       |     0.30
38.250    0.00    0.12      0.052  O       |       |       |       |     0.30
38.333    0.00    0.11      0.051  O       |       |       |       |     0.29
38.417    0.00    0.11      0.050  O       |       |       |       |     0.29
38.500    0.00    0.11      0.049  O       |       |       |       |     0.28
38.583    0.00    0.11      0.048  O       |       |       |       |     0.28
38.667    0.00    0.11      0.048  O       |       |       |       |     0.27
38.750    0.00    0.11      0.047  O       |       |       |       |     0.27
38.833    0.00    0.10      0.046  O       |       |       |       |     0.27
38.917    0.00    0.10      0.046  O       |       |       |       |     0.26
39.000    0.00    0.10      0.045  O       |       |       |       |     0.26
39.083    0.00    0.10      0.044  O       |       |       |       |     0.25

      Remaining water in basin =    0.04 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   469
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        3.851 (CFS)
                   Total volume =       2.262 (Ac.Ft)
            Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      316.100 to Point/Station      316.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    239.75 (Ft.)
      Elevation difference =    3.30 (Ft.)
      Slope of channel =  0.013764 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     1.136(CFS)
      Nearest computed pipe diameter  =      9.00(In.)
      Calculated individual pipe flow  =     1.136(CFS)
      Normal flow depth in pipe =    4.95(In.)
      Flow top width inside pipe =    8.95(In.)
      Critical Depth =    0.49(Ft.)
      Pipe flow velocity =      4.57(Ft/s)
      Travel time through pipe =    0.88 min.


      Pipe length  =   239.75(Ft.)   Elevation difference =   3.30(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     3.851(CFS)
      Nearest computed pipe diameter  =     12.00(In.)
      Calculated individual pipe flow  =     3.851(CFS)
      Normal flow depth in pipe =    9.08(In.)
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```
Flow top width inside pipe =   10.30(In.)
Critical Depth =    0.83(Ft.)
Pipe flow velocity =      6.04(Ft/s)
Travel time through pipe =    0.66 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7803   Travel time =   0.66 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   6.7896
       dt(routing time-step) =   0.52 (min.),   c* =   1.0000

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
              R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.0       1.9       2.9       3.9
----------------------------------------------------------------------
  0+ 5       0.0010      0.00  O         |         |         |         |
  0+10       0.0039      0.00  O         |         |         |         |
  0+15       0.0081      0.01  O         |         |         |         |
  0+20       0.0131      0.01  O         |         |         |         |
  0+25       0.0191      0.02  O         |         |         |         |
  0+30       0.0256      0.03  O         |         |         |         |
  0+35       0.0322      0.03  O         |         |         |         |
  0+40       0.0387      0.04  O         |         |         |         |
  0+45       0.0452      0.05  O         |         |         |         |
  0+50       0.0520      0.05  O         |         |         |         |
  0+55       0.0598      0.06  O         |         |         |         |
  1+ 0       0.0680      0.07  O         |         |         |         |
  1+ 5       0.0758      0.08  O         |         |         |         |
  1+10       0.0826      0.08  O         |         |         |         |
  1+15       0.0886      0.09  O         |         |         |         |
  1+20       0.0943      0.09  O         |         |         |         |
  1+25       0.0999      0.10  |O        |         |         |         |
  1+30       0.1054      0.11  |O        |         |         |         |
  1+35       0.1108      0.11  |O        |         |         |         |
  1+40       0.1162      0.12  |O        |         |         |         |
  1+45       0.1214      0.12  |O        |         |         |         |
  1+50       0.1271      0.13  |O        |         |         |         |
  1+55       0.1337      0.13  |O        |         |         |         |
  2+ 0       0.1408      0.14  |O        |         |         |         |
  2+ 5       0.1479      0.15  |O        |         |         |         |
  2+10       0.1551      0.16  |O        |         |         |         |
  2+15       0.1621      0.16  |O        |         |         |         |
  2+20       0.1690      0.17  |O        |         |         |         |
  2+25       0.1757      0.18  |O        |         |         |         |
  2+30       0.1824      0.18  |O        |         |         |         |
  2+35       0.1895      0.19  |O        |         |         |         |
  2+40       0.1975      0.20  | O       |         |         |         |
  2+45       0.2059      0.21  | O       |         |         |         |
  2+50       0.2145      0.22  | O       |         |         |         |
  2+55       0.2229      0.22  | O       |         |         |         |
  3+ 0       0.2312      0.23  | O       |         |         |         |
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3+ 5       0.2394      0.24  | O       |         |         |         |
3+10       0.2474      0.25  | O       |         |         |         |
3+15       0.2554      0.26  | O       |         |         |         |
3+20       0.2632      0.26  | O       |         |         |         |
3+25       0.2709      0.27  | O       |         |         |         |
3+30       0.2784      0.28  | O       |         |         |         |
3+35       0.2859      0.29  | O       |         |         |         |
3+40       0.2932      0.29  |  O      |         |         |         |
3+45       0.3004      0.30  |  O      |         |         |         |
3+50       0.3080      0.31  |  O      |         |         |         |
3+55       0.3165      0.32  |  O      |         |         |         |
4+ 0       0.3255      0.33  |  O      |         |         |         |
4+ 5       0.3345      0.34  |  O      |         |         |         |
4+10       0.3435      0.34  |  O      |         |         |         |
4+15       0.3523      0.35  |  O      |         |         |         |
4+20       0.3614      0.36  |  O      |         |         |         |
4+25       0.3714      0.37  |  O      |         |         |         |
4+30       0.3819      0.38  |  O      |         |         |         |
4+35       0.3920      0.39  |   O     |         |         |         |
4+40       0.3931      0.39  |   O     |         |         |         |
4+45       0.3931      0.39  |   O     |         |         |         |
4+50       0.3931      0.39  |   O     |         |         |         |
4+55       0.3931      0.39  |   O     |         |         |         |
5+ 0       0.3931      0.39  |   O     |         |         |         |
5+ 5       0.3931      0.39  |   O     |         |         |         |
5+10       0.3931      0.39  |   O     |         |         |         |
5+15       0.3931      0.39  |   O     |         |         |         |
5+20       0.3931      0.39  |   O     |         |         |         |
5+25       0.3931      0.39  |   O     |         |         |         |
5+30       0.3931      0.39  |   O     |         |         |         |
5+35       0.3931      0.39  |   O     |         |         |         |
5+40       0.3931      0.39  |   O     |         |         |         |
5+45       0.3931      0.39  |   O     |         |         |         |
5+50       0.3931      0.39  |   O     |         |         |         |
5+55       0.3931      0.39  |   O     |         |         |         |
6+ 0       0.3931      0.39  |   O     |         |         |         |
6+ 5       0.3931      0.39  |   O     |         |         |         |
6+10       0.3931      0.39  |   O     |         |         |         |
6+15       0.3931      0.39  |   O     |         |         |         |
6+20       0.3931      0.39  |   O     |         |         |         |
6+25       0.3931      0.39  |   O     |         |         |         |
6+30       0.3931      0.39  |   O     |         |         |         |
6+35       0.3931      0.39  |   O     |         |         |         |
6+40       0.3931      0.39  |   O     |         |         |         |
6+45       0.3931      0.39  |   O     |         |         |         |
6+50       0.3931      0.39  |   O     |         |         |         |
6+55       0.3931      0.39  |   O     |         |         |         |
7+ 0       0.3931      0.39  |   O     |         |         |         |
7+ 5       0.3931      0.39  |   O     |         |         |         |
7+10       0.3931      0.39  |   O     |         |         |         |
7+15       0.3931      0.39  |   O     |         |         |         |
7+20       0.3931      0.39  |   O     |         |         |         |
7+25       0.3931      0.39  |   O     |         |         |         |
7+30       0.3931      0.39  |   O     |         |         |         |
7+35       0.3931      0.39  |   O     |         |         |         |
7+40       0.3931      0.39  |   O     |         |         |         |
7+45       0.3931      0.39  |   O     |         |         |         |
7+50       0.3931      0.39  |   O     |         |         |         |
7+55       0.4916      0.50  |    O    |         |         |         |
8+ 0       0.6939      0.72  |      O  |         |         |         |
8+ 5       0.8896      0.91  |        O|         |         |         |
8+10       1.0759      1.10  |         |O        |         |         |
8+15       1.2471      1.26  |         | OI      |         |         |
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 8+20       1.3967      1.41  |         |   O     |         |         |
 8+25       1.5256      1.54  |         |    O    |         |         |
 8+30       1.6357      1.65  |         |     OI  |         |         |
 8+35       1.6647      1.67  |         |      O  |         |         |
 8+40       1.5589      1.55  |         |     O   |         |         |
 8+45       1.3861      1.37  |         |   O     |         |         |
 8+50       1.2228      1.21  |         | O       |         |         |
 8+55       1.0917      1.08  |         |O        |         |         |
 9+ 0       0.9893      0.98  |         O         |         |         |
 9+ 5       0.9188      0.91  |        O|         |         |         |
 9+10       0.8865      0.88  |        O|         |         |         |
 9+15       0.8771      0.88  |        O|         |         |         |
 9+20       0.8821      0.88  |        O|         |         |         |
 9+25       0.9023      0.90  |        O|         |         |         |
 9+30       0.9298      0.93  |        O|         |         |         |
 9+35       0.9640      0.97  |         O         |         |         |
 9+40       1.0085      1.01  |         O         |         |         |
 9+45       1.0568      1.06  |         OI        |         |         |
 9+50       1.1086      1.11  |         |O        |         |         |
 9+55       1.1682      1.17  |         | O       |         |         |
10+ 0       1.2293      1.24  |         | O       |         |         |
10+ 5       1.2419      1.24  |         | O       |         |         |
10+10       1.1670      1.16  |         | O       |         |         |
10+15       1.0486      1.04  |         O         |         |         |
10+20       0.9335      0.92  |        O|         |         |         |
10+25       0.8328      0.82  |       O |         |         |         |
10+30       0.7484      0.74  |      O  |         |         |         |
10+35       0.7097      0.71  |      O  |         |         |         |
10+40       0.7417      0.75  |      O  |         |         |         |
10+45       0.8114      0.82  |       O |         |         |         |
10+50       0.8844      0.89  |        O|         |         |         |
10+55       0.9518      0.96  |        O|         |         |         |
11+ 0       1.0116      1.02  |         O         |         |         |
11+ 5       1.0584      1.06  |         OI        |         |         |
11+10       1.0877      1.09  |         |O        |         |         |
11+15       1.1067      1.11  |         |O        |         |         |
11+20       1.1225      1.12  |         |O        |         |         |
11+25       1.1374      1.14  |         |O        |         |         |
11+30       1.1520      1.15  |         |O        |         |         |
11+35       1.1539      1.15  |         |O        |         |         |
11+40       1.1321      1.13  |         |O        |         |         |
11+45       1.0993      1.10  |         |O        |         |         |
11+50       1.0749      1.07  |         |O        |         |         |
11+55       1.0673      1.07  |         |O        |         |         |
12+ 0       1.0707      1.07  |         |O        |         |         |
12+ 5       1.1217      1.13  |         |O        |         |         |
12+10       1.2561      1.27  |         |  O      |         |         |
12+15       1.4293      1.45  |         |   OI    |         |         |
12+20       1.6015      1.62  |         |     O   |         |         |
12+25       1.7674      1.78  |         |       O |         |         |
12+30       1.9194      1.93  |         |        OI         |         |
12+35       2.0660      2.08  |         |         |O        |         |
12+40       2.2190      2.23  |         |         |  O      |         |
12+45       2.3677      2.38  |         |         |   O     |         |
12+50       2.5075      2.52  |         |         |     O   |         |
12+55       2.6426      2.66  |         |         |      O  |         |
13+ 0       2.7680      2.78  |         |         |       O |         |
13+ 5       2.9107      2.93  |         |         |         O         |
13+10       3.0981      3.12  |         |         |         | O       |
13+15       3.3004      3.32  |         |         |         |   O     |
13+20       3.4865      3.51  |         |         |         |     O   |
13+25       3.6504      3.67  |         |         |         |      OI |
13+30       3.7924      3.81  |         |         |         |        O|
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13+35       3.8465      3.85  |         |         |         |        OI
13+40       3.7557      3.74  |         |         |         |       IO|
13+45       3.5911      3.57  |         |         |         |      O  |
13+50       3.4270      3.41  |         |         |         |    O    |
13+55       3.2818      3.27  |         |         |         |  IO     |
14+ 0       3.1588      3.15  |         |         |         | O       |
14+ 5       3.0805      3.07  |         |         |         |O        |
14+10       3.0658      3.06  |         |         |         |O        |
14+15       3.0872      3.09  |         |         |         | O       |
14+20       3.1100      3.11  |         |         |         | O       |
14+25       3.1210      3.12  |         |         |         | O       |
14+30       3.1242      3.12  |         |         |         | O       |
14+35       3.1263      3.13  |         |         |         | O       |
14+40       3.1291      3.13  |         |         |         | O       |
14+45       3.1331      3.13  |         |         |         | O       |
14+50       3.1319      3.13  |         |         |         | O       |
14+55       3.1199      3.12  |         |         |         | O       |
15+ 0       3.1031      3.10  |         |         |         | O       |
15+ 5       3.0819      3.08  |         |         |         |IO       |
15+10       3.0521      3.05  |         |         |         |O        |
15+15       3.0201      3.02  |         |         |         |O        |
15+20       2.9858      2.98  |         |         |         IO        |
15+25       2.9448      2.94  |         |         |         O         |
15+30       2.9032      2.90  |         |         |         O         |
15+35       2.8419      2.84  |         |         |        O|         |
15+40       2.7399      2.73  |         |         |       O |         |
15+45       2.6220      2.61  |         |         |      O  |         |
15+50       2.5136      2.50  |         |         |    IO   |         |
15+55       2.4201      2.41  |         |         |    O    |         |
16+ 0       2.3414      2.33  |         |         |   O     |         |
16+ 5       2.2363      2.23  |         |         |  O      |         |
16+10       2.0682      2.05  |         |         |O        |         |
16+15       1.8744      1.85  |         |        O|         |         |
16+20       1.6945      1.68  |         |      O  |         |         |
16+25       1.5370      1.52  |         |    O    |         |         |
16+30       1.4021      1.39  |         |   O     |         |         |
16+35       1.2821      1.27  |         |  O      |         |         |
16+40       1.1702      1.16  |         | O       |         |         |
16+45       1.0687      1.06  |         IO        |         |         |
16+50       0.9802      0.97  |         O         |         |         |
16+55       0.9041      0.90  |        O|         |         |         |
17+ 0       0.8391      0.83  |       O |         |         |         |
17+ 5       0.7928      0.79  |       O |         |         |         |
17+10       0.7719      0.77  |      IO |         |         |         |
17+15       0.7659      0.77  |      O  |         |         |         |
17+20       0.7643      0.76  |      O  |         |         |         |
17+25       0.7637      0.76  |      O  |         |         |         |
17+30       0.7634      0.76  |      O  |         |         |         |
17+35       0.7630      0.76  |      O  |         |         |         |
17+40       0.7627      0.76  |      O  |         |         |         |
17+45       0.7625      0.76  |      O  |         |         |         |
17+50       0.7577      0.76  |      O  |         |         |         |
17+55       0.7442      0.74  |      O  |         |         |         |
18+ 0       0.7267      0.72  |      O  |         |         |         |
18+ 5       0.7101      0.71  |      O  |         |         |         |
18+10       0.6954      0.69  |      O  |         |         |         |
18+15       0.6828      0.68  |      O  |         |         |         |
18+20       0.6721      0.67  |     O   |         |         |         |
18+25       0.6629      0.66  |     O   |         |         |         |
18+30       0.6550      0.65  |     O   |         |         |         |
18+35       0.6437      0.64  |     O   |         |         |         |
18+40       0.6246      0.62  |     O   |         |         |         |
18+45       0.6024      0.60  |     O   |         |         |         |
```

18+50	0.5771	0.57	|	O	|	|	|
18+55	0.5456	0.54	|	O	|	|	|
19+ 0	0.5127	0.51	|	O	|	|	|
19+ 5	0.4876	0.49	|	O	|	|	|
19+10	0.4750	0.47	|	O	|	|	|
19+15	0.4701	0.47	|	O	|	|	|
19+20	0.4723	0.47	|	O	|	|	|
19+25	0.4840	0.49	|	O	|	|	|
19+30	0.5000	0.50	|	O	|	|	|
19+35	0.5107	0.51	|	O	|	|	|
19+40	0.5109	0.51	|	O	|	|	|
19+45	0.5052	0.50	|	O	|	|	|
19+50	0.4940	0.49	|	O	|	|	|
19+55	0.4746	0.47	|	O	|	|	|
20+ 0	0.4521	0.45	|	O	|	|	|
20+ 5	0.4357	0.43	|	O	|	|	|
20+10	0.4307	0.43	|	O	|	|	|
20+15	0.4323	0.43	|	O	|	|	|
20+20	0.4353	0.44	|	O	|	|	|
20+25	0.4384	0.44	|	O	|	|	|
20+30	0.4411	0.44	|	O	|	|	|
20+35	0.4433	0.44	|	O	|	|	|
20+40	0.4453	0.45	|	O	|	|	|
20+45	0.4469	0.45	|	O	|	|	|
20+50	0.4437	0.44	|	O	|	|	|
20+55	0.4316	0.43	|	O	|	|	|
21+ 0	0.4153	0.41	|	O	|	|	|
21+ 5	0.4043	0.40	|	O	|	|	|
21+10	0.4038	0.40	|	O	|	|	|
21+15	0.4093	0.41	|	O	|	|	|
21+20	0.4111	0.41	|	O	|	|	|
21+25	0.4037	0.40	|	O	|	|	|
21+30	0.3941	0.39	|	O	|	|	|
21+35	0.3931	0.39	|	O	|	|	|
21+40	0.3931	0.39	|	O	|	|	|
21+45	0.3931	0.39	|	O	|	|	|
21+50	0.3959	0.40	|	O	|	|	|
21+55	0.3934	0.39	|	O	|	|	|
22+ 0	0.3931	0.39	|	O	|	|	|
22+ 5	0.3931	0.39	|	O	|	|	|
22+10	0.3931	0.39	|	O	|	|	|
22+15	0.3931	0.39	|	O	|	|	|
22+20	0.3931	0.39	|	O	|	|	|
22+25	0.3931	0.39	|	O	|	|	|
22+30	0.3931	0.39	|	O	|	|	|
22+35	0.3931	0.39	|	O	|	|	|
22+40	0.3931	0.39	|	O	|	|	|
22+45	0.3931	0.39	|	O	|	|	|
22+50	0.3931	0.39	|	O	|	|	|
22+55	0.3931	0.39	|	O	|	|	|
23+ 0	0.3931	0.39	|	O	|	|	|
23+ 5	0.3931	0.39	|	O	|	|	|
23+10	0.3931	0.39	|	O	|	|	|
23+15	0.3931	0.39	|	O	|	|	|
23+20	0.3931	0.39	|	O	|	|	|
23+25	0.3931	0.39	|	O	|	|	|
23+30	0.3931	0.39	|	O	|	|	|
23+35	0.3931	0.39	|	O	|	|	|
23+40	0.3931	0.39	|	O	|	|	|
23+45	0.3931	0.39	|	O	|	|	|
23+50	0.3931	0.39	|	O	|	|	|
23+55	0.3931	0.39	|	O	|	|	|
24+ 0	0.3931	0.39	|	O	|	|	|

24+ 5	0.3931	0.39	O				
24+10	0.3931	0.39	O				
24+15	0.3931	0.39	O				
24+20	0.3931	0.39	O				
24+25	0.3931	0.39	O				
24+30	0.3931	0.39	O				
24+35	0.3931	0.39	O				
24+40	0.3931	0.39	O				
24+45	0.3931	0.39	O				
24+50	0.3931	0.39	O				
24+55	0.3931	0.39	O				
25+ 0	0.3931	0.39	O				
25+ 5	0.3931	0.39	O				
25+10	0.3931	0.39	O				
25+15	0.3931	0.39	O				
25+20	0.3931	0.39	O				
25+25	0.3931	0.39	O				
25+30	0.3931	0.39	O				
25+35	0.3931	0.39	O				
25+40	0.3931	0.39	O				
25+45	0.3931	0.39	O				
25+50	0.3931	0.39	O				
25+55	0.3931	0.39	O				
26+ 0	0.3931	0.39	O				
26+ 5	0.3931	0.39	O				
26+10	0.3931	0.39	O				
26+15	0.3931	0.39	O				
26+20	0.3931	0.39	O				
26+25	0.3931	0.39	O				
26+30	0.3931	0.39	O				
26+35	0.3931	0.39	O				
26+40	0.3931	0.39	O				
26+45	0.3931	0.39	O				
26+50	0.3931	0.39	O				
26+55	0.3931	0.39	O				
27+ 0	0.3931	0.39	O				
27+ 5	0.3931	0.39	O				
27+10	0.3931	0.39	O				
27+15	0.3931	0.39	O				
27+20	0.3931	0.39	O				
27+25	0.3931	0.39	O				
27+30	0.3931	0.39	O				
27+35	0.3931	0.39	O				
27+40	0.3931	0.39	O				
27+45	0.3931	0.39	O				
27+50	0.3931	0.39	O				
27+55	0.3931	0.39	O				
28+ 0	0.3931	0.39	O				
28+ 5	0.3931	0.39	O				
28+10	0.3931	0.39	O				
28+15	0.3931	0.39	O				
28+20	0.3931	0.39	O				
28+25	0.3931	0.39	O				
28+30	0.3931	0.39	O				
28+35	0.3931	0.39	O				
28+40	0.3931	0.39	O				
28+45	0.3931	0.39	O				
28+50	0.3931	0.39	O				
28+55	0.3931	0.39	O				
29+ 0	0.3931	0.39	O				
29+ 5	0.3931	0.39	O				
29+10	0.3931	0.39	O				
29+15	0.3931	0.39	O				

29+20	0.3931	0.39	O				
29+25	0.3931	0.39	O				
29+30	0.3931	0.39	O				
29+35	0.3931	0.39	O				
29+40	0.3931	0.39	O				
29+45	0.3931	0.39	O				
29+50	0.3931	0.39	O				
29+55	0.3931	0.39	O				
30+ 0	0.3931	0.39	O				
30+ 5	0.3931	0.39	O				
30+10	0.3931	0.39	O				
30+15	0.3931	0.39	O				
30+20	0.3931	0.39	O				
30+25	0.3931	0.39	O				
30+30	0.3931	0.39	O				
30+35	0.3931	0.39	O				
30+40	0.3931	0.39	O				
30+45	0.3931	0.39	O				
30+50	0.3931	0.39	O				
30+55	0.3931	0.39	O				
31+ 0	0.3931	0.39	O				
31+ 5	0.3931	0.39	O				
31+10	0.3931	0.39	O				
31+15	0.3931	0.39	O				
31+20	0.3931	0.39	O				
31+25	0.3931	0.39	O				
31+30	0.3931	0.39	O				
31+35	0.3931	0.39	O				
31+40	0.3931	0.39	O				
31+45	0.3922	0.39	O				
31+50	0.3866	0.39	O				
31+55	0.3807	0.38	O				
32+ 0	0.3748	0.37	O				
32+ 5	0.3690	0.37	O				
32+10	0.3633	0.36	O				
32+15	0.3577	0.36	O				
32+20	0.3522	0.35	O				
32+25	0.3467	0.35	O				
32+30	0.3414	0.34	O				
32+35	0.3361	0.34	O				
32+40	0.3309	0.33	O				
32+45	0.3258	0.33	O				
32+50	0.3208	0.32	O				
32+55	0.3158	0.32	O				
33+ 0	0.3110	0.31	O				
33+ 5	0.3062	0.31	O				
33+10	0.3014	0.30	O				
33+15	0.2968	0.30	O				
33+20	0.2922	0.29	O				
33+25	0.2877	0.29	O				
33+30	0.2832	0.28	O				
33+35	0.2789	0.28	O				
33+40	0.2746	0.27	O				
33+45	0.2703	0.27	O				
33+50	0.2662	0.27	O				
33+55	0.2620	0.26	O				
34+ 0	0.2580	0.26	O				
34+ 5	0.2540	0.25	O				
34+10	0.2501	0.25	O				
34+15	0.2462	0.25	O				
34+20	0.2424	0.24	O				
34+25	0.2387	0.24	O				
34+30	0.2350	0.23	O				

```
   34+35       0.2314      0.23  | O       |         |         |         |
   34+40       0.2278      0.23  | O       |         |         |         |
   34+45       0.2243      0.22  | O       |         |         |         |
   34+50       0.2208      0.22  | O       |         |         |         |
   34+55       0.2174      0.22  | O       |         |         |         |
   35+ 0       0.2141      0.21  | O       |         |         |         |
   35+ 5       0.2108      0.21  | O       |         |         |         |
   35+10       0.2075      0.21  | O       |         |         |         |
   35+15       0.2043      0.20  | O       |         |         |         |
   35+20       0.2011      0.20  | O       |         |         |         |
   35+25       0.1980      0.20  | O       |         |         |         |
   35+30       0.1950      0.19  | O       |         |         |         |
   35+35       0.1920      0.19  |O        |         |         |         |
   35+40       0.1890      0.19  |O        |         |         |         |
   35+45       0.1861      0.19  |O        |         |         |         |
   35+50       0.1832      0.18  |O        |         |         |         |
   35+55       0.1804      0.18  |O        |         |         |         |
   36+ 0       0.1776      0.18  |O        |         |         |         |
   36+ 5       0.1749      0.17  |O        |         |         |         |
   36+10       0.1722      0.17  |O        |         |         |         |
   36+15       0.1695      0.17  |O        |         |         |         |
   36+20       0.1669      0.17  |O        |         |         |         |
   36+25       0.1643      0.16  |O        |         |         |         |
   36+30       0.1618      0.16  |O        |         |         |         |
   36+35       0.1593      0.16  |O        |         |         |         |
   36+40       0.1568      0.16  |O        |         |         |         |
   36+45       0.1544      0.15  |O        |         |         |         |
   36+50       0.1520      0.15  |O        |         |         |         |
   36+55       0.1497      0.15  |O        |         |         |         |
   37+ 0       0.1474      0.15  |O        |         |         |         |
   37+ 5       0.1451      0.14  |O        |         |         |         |
   37+10       0.1428      0.14  |O        |         |         |         |
   37+15       0.1406      0.14  |O        |         |         |         |
   37+20       0.1385      0.14  |O        |         |         |         |
   37+25       0.1363      0.14  |O        |         |         |         |
   37+30       0.1342      0.13  |O        |         |         |         |
   37+35       0.1322      0.13  |O        |         |         |         |
   37+40       0.1301      0.13  |O        |         |         |         |
   37+45       0.1281      0.13  |O        |         |         |         |
   37+50       0.1261      0.13  |O        |         |         |         |
   37+55       0.1242      0.12  |O        |         |         |         |
   38+ 0       0.1223      0.12  |O        |         |         |         |
   38+ 5       0.1204      0.12  |O        |         |         |         |
   38+10       0.1185      0.12  |O        |         |         |         |
   38+15       0.1167      0.12  |O        |         |         |         |
   38+20       0.1149      0.11  |O        |         |         |         |
   38+25       0.1131      0.11  |O        |         |         |         |
   38+30       0.1114      0.11  |O        |         |         |         |
   38+35       0.1096      0.11  |O        |         |         |         |
   38+40       0.1080      0.11  |O        |         |         |         |
   38+45       0.1063      0.11  |O        |         |         |         |
   38+50       0.1046      0.10  |O        |         |         |         |
   38+55       0.1030      0.10  |O        |         |         |         |
   39+ 0       0.1014      0.10  |O        |         |         |         |
   39+ 5       0.0999      0.10  |O        |         |         |         |
   39+10       0.0103      0.00  O         |         |         |         |
   39+15       0.0000      0.00  O         |         |         |         |
---------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =   471
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        3.847 (CFS)
                 Total volume =       2.262 (Ac.Ft)
```

```
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      316.100 to Point/Station      316.200
**** STORE OR DELETE CURRENT HYDROGRAPH ****
______________________________________________________________________
Current stream hydrograph saved in file 27259PONDC1024.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =     0
             Time interval =    0.0 (Min.)
             Maximum/Peak flow rate =        0.000 (CFS)
             Total volume =       0.000 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA D (Pond D)- Q10yr1hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHD110.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    14
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        2.721 (CFS)
             Total volume =       0.078 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      401.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   0.50(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.25(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.75(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)
```

```
CALCULATED OUTFLOW DATA AT DEPTH =    4.40(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.90(Ft.)    Capacity =   0.06(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.15(Ft.)    Capacity =   2.43(CFS)

Total outflow at this depth =      2.50(CFS)

-------------------------------------------------------------------
Total number of inflow hydrograph intervals = 14
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
-------------------------------------------------------------------
-------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
-------------------------------------------------------------------
-------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
-------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.042      0.064      0.042        0.042
   3.250      0.113      0.064      0.113        0.113
   4.400      0.222      2.498      0.213        0.231
-------------------------------------------------------------------
             Hydrograph Detention Basin Routing
-------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                    Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       0.7    1.36    2.04    2.72 (Ft.)
 0.083    0.22    0.00      0.001  O I     |       |       |       |     0.02
 0.167    0.43    0.00      0.003  O    I  |       |       |       |     0.07
 0.250    0.50    0.01      0.006  O    I  |       |       |       |     0.15
 0.333    0.54    0.01      0.010  O     I |       |       |       |     0.23
 0.417    0.61    0.02      0.013  O      I|       |       |       |     0.32
 0.500    0.64    0.03      0.018  O      I|       |       |       |     0.42
 0.583    0.74    0.03      0.022  O       I       |       |       |     0.53
 0.667    0.91    0.04      0.028  O       | I     |       |       |     0.66
 0.750    1.31    0.05      0.035  O       |      I|       |       |     0.83
 0.833    2.72    0.06      0.048  O       |       |       |       I     1.20
 0.917    1.81    0.06      0.064  O       |       |    I  |       |     1.68
 1.000    0.71    0.06      0.072  O       I       |       |       |     1.94
 1.083    0.18    0.06      0.074  O I     |       |       |       |     2.02
 1.167    0.02    0.06      0.075  O       |       |       |       |     2.03
 1.250    0.00    0.06      0.074  O       |       |       |       |     2.02


Remaining water in basin =    0.07 (Ac.Ft)
```

```
****************************HYDROGRAPH DATA****************************
             Number of intervals =    15
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.064 (CFS)
             Total volume =       0.004 (Ac.Ft)
      Status of hydrographs being held in storage
                 Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
***********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.100 to Point/Station       10.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =   1426.00 (Ft.)
Elevation difference =   12.55 (Ft.)
Slope of channel =  0.008801 (Vert/Horiz)
Channel type - Pipe


Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.040(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.040(CFS)
Normal flow depth in pipe =    1.46(In.)
Flow top width inside pipe =    3.00(In.)
Critical Depth =    0.12(Ft.)
Pipe flow velocity =      1.67(Ft/s)
Travel time through pipe =   14.25 min.


Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.064(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.064(CFS)
Normal flow depth in pipe =    2.00(In.)
Flow top width inside pipe =    2.83(In.)
Critical Depth =    0.15(Ft.)
Pipe flow velocity =      1.87(Ft/s)
Travel time through pipe =   12.72 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.5236   Travel time =  12.72 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   0.8338
       dt(routing time-step) =   6.66 (min.),   c* =   0.4611

Output hydrograph delayed by 0  unit time increments
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T   O F   S T O R M
                  R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
              Hydrograph in   5   Minute intervals (CFS)

--------------------------------------------------------------------
 Time(h+m) Out = O(CFS) In = I  0        0.0       0.0       0.0       0.1
 ---------------------------------------------------------------------
   0+ 5       0.0001      0.00  O         |         |         |         |
   0+10       0.0010      0.00  O I       |         |         |         |
   0+15       0.0032      0.01  |O   I    |         |         |         |
   0+20       0.0067      0.01  |   O    I|         |         |         |
   0+25       0.0111      0.02  |     O   | I       |         |         |
   0+30       0.0162      0.03  |         O     I   |         |         |
   0+35       0.0220      0.03  |         |  O      |I        |         |
   0+40       0.0284      0.04  |         |      O  |     I   |         |
   0+45       0.0361      0.05  |         |         | O       |  I      |
   0+50       0.0454      0.06  |         |         |       O |         I
   0+55       0.0541      0.06  |         |         |         |  O      I
   1+ 0       0.0588      0.06  |         |         |         |     O   I
   1+ 5       0.0614      0.06  |         |         |         |       O I
   1+10       0.0627      0.06  |         |         |         |        OI
   1+15       0.0635      0.06  |         |         |         |        OI
   1+20       0.0565      0.00  I         |         |         |    O    |
   1+25       0.0304      0.00  I         |       O |         |         |
   1+30       0.0164      0.00  I         O         |         |         |
   1+35       0.0088      0.00  I    O    |         |         |         |
   1+40       0.0048      0.00  I O       |         |         |         |
   1+45       0.0026      0.00  IO        |         |         |         |
   1+50       0.0014      0.00  O         |         |         |         |
   1+55       0.0000      0.00  O         |         |         |         |
---------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =    23
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        0.063 (CFS)
                   Total volume =       0.004 (Ac.Ft)
            Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      401.100 to Point/Station       10.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ____________________________________________________________________
      Current stream hydrograph saved in file 27259DPOND101.rte
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =     0
                   Time interval =    0.0 (Min.)
                   Maximum/Peak flow rate =        0.000 (CFS)
                   Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************
```

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

---------------------------------------------------------------------

PM #13523
MILL CREEK PROMENADE
AREA D (Pond D)- Q10yr3hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHD310.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    38
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        1.403 (CFS)
             Total volume =       0.115 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      401.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   0.50(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.25(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.75(Ft.)    Capacity =   0.06(CFS)
```

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.40(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.90(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.15(Ft.) Capacity = 2.43(CFS)

Total outflow at this depth = 2.50(CFS)

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.042	0.064	0.042	0.042
3.250	0.113	0.064	0.113	0.113
4.400	0.222	2.498	0.213	0.231

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 0.4 0.70 1.05 1.40	Depth (Ft.)
0.083	0.11	0.00	0.000	O I | | | |	0.01
0.167	0.18	0.00	0.001	O I | | | |	0.03
0.250	0.16	0.00	0.003	O I | | | |	0.06
0.333	0.20	0.01	0.004	O I | | | |	0.09
0.417	0.22	0.01	0.005	O I | | | |	0.12
0.500	0.26	0.01	0.007	O I | | | |	0.16
0.583	0.24	0.01	0.008	O I | | | |	0.20
0.667	0.26	0.02	0.010	O I | | | |	0.24
0.750	0.28	0.02	0.012	O I | | | |	0.28
0.833	0.25	0.02	0.013	O I | | | |	0.32
0.917	0.24	0.02	0.015	O I | | | |	0.36
1.000	0.26	0.03	0.017	O I | | | |	0.39
1.083	0.32	0.03	0.018	O I| | | |	0.44
1.167	0.35	0.03	0.020	O I | | | |	0.49
1.250	0.35	0.03	0.023	O I | | | |	0.54
1.333	0.33	0.04	0.025	O I| | | |	0.59
1.417	0.39	0.04	0.027	O I | | | |	0.64
1.500	0.44	0.05	0.030	|O |I | | |	0.70

```
1.583    0.41    0.05      0.032  |O      |I      |       |       |     0.77
1.667    0.43    0.05      0.035  |O      |I      |       |       |     0.83
1.750    0.51    0.06      0.038  |O      |  I    |       |       |     0.89
1.833    0.53    0.06      0.041  |O      |   I   |       |       |     0.97
1.917    0.50    0.06      0.044  |O      |  I    |       |       |     1.06
2.000    0.50    0.06      0.047  |O      |  I    |       |       |     1.15
2.083    0.51    0.06      0.050  |O      |  I    |       |       |     1.25
2.167    0.65    0.06      0.053  |O      |     I |       |       |     1.36
2.250    0.81    0.06      0.058  |O      |       | I     |       |     1.51
2.333    0.70    0.06      0.063  |O      |      I|       |       |     1.66
2.417    0.98    0.06      0.068  |O      |       |     I |       |     1.83
2.500    1.24    0.06      0.075  |O      |       |       |   I   |     2.06
2.583    1.40    0.06      0.084  |O      |       |       |       I     2.33
2.667    1.20    0.06      0.093  |O      |       |       |  I    |     2.60
2.750    0.62    0.06      0.098  |O      |     I |       |       |     2.79
2.833    0.32    0.06      0.101  |O     I|       |       |       |     2.87
2.917    0.28    0.06      0.103  |O    I |       |       |       |     2.93
3.000    0.14    0.06      0.104  |O I    |       |       |       |     2.96
3.083    0.03    0.06      0.104  IO      |       |       |       |     2.96
3.167    0.00    0.06      0.104  IO      |       |       |       |     2.95
3.250    0.00    0.06      0.103  IO      |       |       |       |     2.94


     Remaining water in basin =    0.10 (Ac.Ft)


     ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    39
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.064 (CFS)
                  Total volume =       0.012 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
     ***********************************************************************

     ----------------------------------------------------------------------


     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
     Process from Point/Station      401.100 to Point/Station       10.000
     **** STREAM ROUTING SCS CONVEX METHOD ****
     ______________________________________________________________________
     HYDROGRAPH STREAM ROUTING DATA:
     Length of stream =   1426.00 (Ft.)
     Elevation difference =   12.55 (Ft.)
     Slope of channel =  0.008801 (Vert/Horiz)
     Channel type - Pipe


     Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
     Manning's N = 0.013   No. of pipes = 1
     Pipe evaluation using mean flow rate of hydrograph
     Required pipe flow  =     0.043(CFS)
     Nearest computed pipe diameter  =      3.00(In.)
     Calculated individual pipe flow  =     0.043(CFS)
     Normal flow depth in pipe =    1.53(In.)
     Flow top width inside pipe =    3.00(In.)
     Critical Depth =    0.12(Ft.)
     Pipe flow velocity =      1.70(Ft/s)
     Travel time through pipe =   13.96 min.
```

```
Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.064(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.064(CFS)
Normal flow depth in pipe =    2.00(In.)
Flow top width inside pipe =    2.83(In.)
Critical Depth =    0.15(Ft.)
Pipe flow velocity =      1.87(Ft/s)
Travel time through pipe =   12.72 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.5236   Travel time =  12.72 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   0.8338
       dt(routing time-step) =   6.66 (min.),   c* =   0.4611

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.0       0.0       0.0       0.1
----------------------------------------------------------------------
  0+ 5       0.0001      0.00  O         |         |         |         |
  0+10       0.0005      0.00  OI        |         |         |         |
  0+15       0.0015      0.00  O I       |         |         |         |
  0+20       0.0028      0.01  |O I      |         |         |         |
  0+25       0.0044      0.01  | O I     |         |         |         |
  0+30       0.0063      0.01  |  O  I   |         |         |         |
  0+35       0.0085      0.01  |    O I  |         |         |         |
  0+40       0.0108      0.02  |     O  I|         |         |         |
  0+45       0.0132      0.02  |       O |I        |         |         |
  0+50       0.0157      0.02  |        O| I       |         |         |
  0+55       0.0182      0.02  |         |O  I     |         |         |
  1+ 0       0.0207      0.03  |         | O  I    |         |         |
  1+ 5       0.0231      0.03  |         |   O  I  |         |         |
  1+10       0.0258      0.03  |         |     O  I|         |         |
  1+15       0.0288      0.03  |         |      O  |I        |         |
  1+20       0.0319      0.04  |         |        O|  I      |         |
  1+25       0.0351      0.04  |         |         |O   I    |         |
  1+30       0.0384      0.05  |         |         |  O    I |         |
  1+35       0.0420      0.05  |         |         |     O   I         |
  1+40       0.0458      0.05  |         |         |       O |  I      |
  1+45       0.0497      0.06  |         |         |         O    I    |
  1+50       0.0539      0.06  |         |         |         |  O    I |
  1+55       0.0580      0.06  |         |         |         |     O   I
  2+ 0       0.0609      0.06  |         |         |         |      O  I
  2+ 5       0.0625      0.06  |         |         |         |       O I
  2+10       0.0634      0.06  |         |         |         |        OI
  2+15       0.0638      0.06  |         |         |         |        OI
  2+20       0.0641      0.06  |         |         |         |        OI
```

```
    2+25       0.0642      0.06  |         |         |         |        OI
    2+30       0.0643      0.06  |         |         |         |        OI
    2+35       0.0643      0.06  |         |         |         |        OI
    2+40       0.0643      0.06  |         |         |         |        OI
    2+45       0.0643      0.06  |         |         |         |        OI
    2+50       0.0643      0.06  |         |         |         |        OI
    2+55       0.0643      0.06  |         |         |         |        OI
    3+ 0       0.0643      0.06  |         |         |         |        OI
    3+ 5       0.0643      0.06  |         |         |         |        OI
    3+10       0.0643      0.06  |         |         |         |        OI
    3+15       0.0643      0.06  |         |         |         |        OI
    3+20       0.0569      0.00  I         |         |         |    O    |
    3+25       0.0307      0.00  I         |        O|         |         |
    3+30       0.0165      0.00  I         O         |         |         |
    3+35       0.0089      0.00  I    O    |         |         |         |
    3+40       0.0048      0.00  I O       |         |         |         |
    3+45       0.0026      0.00  IO        |         |         |         |
    3+50       0.0014      0.00  O         |         |         |         |
    3+55       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    47
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.064 (CFS)
                  Total volume =       0.012 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      401.100 to Point/Station       10.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259DPOND103.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ----------------------------------------------------------------------
```

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

---------------------------------------------------------------------

PM #13523
MILL CREEK PROMENADE
AREA D (Pond D)- Q10yr6hr(ONSITE)- Unit Hydrograph Method
---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHD610.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    74
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        1.386 (CFS)
             Total volume =       0.162 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      401.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   0.50(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.25(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.75(Ft.)    Capacity =   0.06(CFS)
```

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.40(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.90(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.15(Ft.) Capacity = 2.43(CFS)

Total outflow at this depth = 2.50(CFS)

Total number of inflow hydrograph intervals = 74
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.042	0.064	0.042	0.042
3.250	0.113	0.064	0.113	0.113
4.400	0.222	2.498	0.213	0.231

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.3	0.69	1.04	1.39	Depth (Ft.)
0.083	0.05	0.00	0.000	OI	|	|	|	|	0.00
0.167	0.10	0.00	0.001	O I	|	|	|	|	0.02
0.250	0.11	0.00	0.001	O I	|	|	|	|	0.03
0.333	0.11	0.00	0.002	O I	|	|	|	|	0.05
0.417	0.11	0.00	0.003	O I	|	|	|	|	0.07
0.500	0.13	0.01	0.004	O I	|	|	|	|	0.09
0.583	0.14	0.01	0.004	O I	|	|	|	|	0.11
0.667	0.14	0.01	0.005	O I	|	|	|	|	0.13
0.750	0.14	0.01	0.006	O I	|	|	|	|	0.15
0.833	0.14	0.01	0.007	O I	|	|	|	|	0.17
0.917	0.14	0.01	0.008	O I	|	|	|	|	0.19
1.000	0.15	0.01	0.009	O I	|	|	|	|	0.21
1.083	0.16	0.02	0.010	O I	|	|	|	|	0.24
1.167	0.17	0.02	0.011	O I	|	|	|	|	0.26
1.250	0.17	0.02	0.012	O I	|	|	|	|	0.28
1.333	0.17	0.02	0.013	O I	|	|	|	|	0.31
1.417	0.17	0.02	0.014	O I	|	|	|	|	0.33
1.500	0.17	0.02	0.015	O I	|	|	|	|	0.36

```
1.583    0.17    0.02      0.016  O  I    |       |       |       |     0.38
1.667    0.17    0.03      0.017  O  I    |       |       |       |     0.40
1.750    0.17    0.03      0.018  O  I    |       |       |       |     0.43
1.833    0.17    0.03      0.019  O  I    |       |       |       |     0.45
1.917    0.17    0.03      0.020  O  I    |       |       |       |     0.47
2.000    0.18    0.03      0.021  O   I   |       |       |       |     0.49
2.083    0.17    0.03      0.022  O   I   |       |       |       |     0.52
2.167    0.18    0.03      0.023  O   I   |       |       |       |     0.54
2.250    0.19    0.04      0.024  O   I   |       |       |       |     0.57
2.333    0.19    0.04      0.025  O   I   |       |       |       |     0.59
2.417    0.19    0.04      0.026  O   I   |       |       |       |     0.62
2.500    0.19    0.04      0.027  O   I   |       |       |       |     0.64
2.583    0.19    0.04      0.028  O   I   |       |       |       |     0.67
2.667    0.19    0.04      0.029  |O  I   |       |       |       |     0.69
2.750    0.21    0.05      0.030  |O  I   |       |       |       |     0.72
2.833    0.22    0.05      0.031  |O   I  |       |       |       |     0.74
2.917    0.22    0.05      0.032  |O   I  |       |       |       |     0.77
3.000    0.22    0.05      0.034  |O   I  |       |       |       |     0.80
3.083    0.22    0.05      0.035  |O   I  |       |       |       |     0.83
3.167    0.24    0.06      0.036  |O   I  |       |       |       |     0.86
3.250    0.25    0.06      0.037  |O   I  |       |       |       |     0.89
3.333    0.25    0.06      0.039  |O   I  |       |       |       |     0.92
3.417    0.26    0.06      0.040  |O    I |       |       |       |     0.95
3.500    0.29    0.06      0.041  |O    I |       |       |       |     0.98
3.583    0.32    0.06      0.043  |O     I|       |       |       |     1.03
3.667    0.33    0.06      0.045  |O     I|       |       |       |     1.09
3.750    0.35    0.06      0.047  |O      I       |       |       |     1.15
3.833    0.36    0.06      0.049  |O      I       |       |       |     1.21
3.917    0.37    0.06      0.051  |O      I       |       |       |     1.28
4.000    0.38    0.06      0.053  |O      I       |       |       |     1.35
4.083    0.40    0.06      0.055  |O      |I      |       |       |     1.42
4.167    0.43    0.06      0.058  |O      |I      |       |       |     1.49
4.250    0.46    0.06      0.060  |O      | I     |       |       |     1.58
4.333    0.48    0.06      0.063  |O      |  I    |       |       |     1.67
4.417    0.51    0.06      0.066  |O      |  I    |       |       |     1.76
4.500    0.52    0.06      0.069  |O      |   I   |       |       |     1.86
4.583    0.54    0.06      0.072  |O      |   I   |       |       |     1.96
4.667    0.57    0.06      0.076  |O      |    I  |       |       |     2.07
4.750    0.59    0.06      0.079  |O      |    I  |       |       |     2.18
4.833    0.60    0.06      0.083  |O      |    I  |       |       |     2.30
4.917    0.62    0.06      0.087  |O      |     I |       |       |     2.42
5.000    0.65    0.06      0.091  |O      |     I |       |       |     2.54
5.083    0.74    0.06      0.095  |O      |       |I      |       |     2.68
5.167    0.88    0.06      0.100  |O      |       |   I   |       |     2.84
5.250    0.98    0.06      0.106  |O      |       |     I |       |     3.03
5.333    1.07    0.06      0.113  |O      |       |       I       |     3.24
5.417    1.18    0.21      0.120  |   O   |       |       |  I    |     3.32
5.500    1.39    0.36      0.126  |       O       |       |       I     3.39
5.583    0.85    0.47      0.131  |       | O     |  I    |       |     3.44
5.667    0.34    0.49      0.132  |      I|  O    |       |       |     3.45
5.750    0.15    0.45      0.130  |  I    | O     |       |       |     3.43
5.833    0.10    0.41      0.128  | I     |O      |       |       |     3.41
5.917    0.05    0.36      0.126  |I      O       |       |       |     3.39
6.000    0.01    0.31      0.124  I      O|       |       |       |     3.37
6.083    0.00    0.27      0.122  I     O |       |       |       |     3.35
6.167    0.00    0.23      0.120  I    O  |       |       |       |     3.33
6.250    0.00    0.20      0.119  I   O   |       |       |       |     3.31
6.333    0.00    0.17      0.118  I  O    |       |       |       |     3.30
6.417    0.00    0.15      0.117  I  O    |       |       |       |     3.29
6.500    0.00    0.12      0.116  I O     |       |       |       |     3.28
6.583    0.00    0.11      0.115  I O     |       |       |       |     3.27
6.667    0.00    0.09      0.114  I O     |       |       |       |     3.26
```

```
Remaining water in basin =    0.11 (Ac.Ft)


****************************HYDROGRAPH DATA****************************
             Number of intervals =    80
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.489 (CFS)
             Total volume =       0.048 (Ac.Ft)
      Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
***********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.100 to Point/Station       10.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =   1426.00 (Ft.)
Elevation difference =   12.55 (Ft.)
Slope of channel =  0.008801 (Vert/Horiz)
Channel type - Pipe


Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.082(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.082(CFS)
Normal flow depth in pipe =    2.42(In.)
Flow top width inside pipe =    2.37(In.)
Critical Depth =    0.17(Ft.)
Pipe flow velocity =      1.93(Ft/s)
Travel time through pipe =   12.34 min.


Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.489(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.489(CFS)
Normal flow depth in pipe =    4.57(In.)
Flow top width inside pipe =    5.11(In.)
Critical Depth =    0.36(Ft.)
Pipe flow velocity =      3.04(Ft/s)
Travel time through pipe =    7.81 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.6417   Travel time =   7.81 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   0.9988
       dt(routing time-step) =   5.01 (min.),   c* =   0.6412
```

Output hydrograph delayed by 0 unit time increments

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T   O F   S T O R M
                  R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
              Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.1       0.2       0.4       0.5
----------------------------------------------------------------------
  0+ 5       0.0000      0.00  O         |         |         |         |
  0+10       0.0002      0.00  O         |         |         |         |
  0+15       0.0007      0.00  O         |         |         |         |
  0+20       0.0016      0.00  O         |         |         |         |
  0+25       0.0026      0.00  O         |         |         |         |
  0+30       0.0037      0.01  O         |         |         |         |
  0+35       0.0049      0.01  O         |         |         |         |
  0+40       0.0062      0.01  O         |         |         |         |
  0+45       0.0075      0.01  O         |         |         |         |
  0+50       0.0088      0.01  O         |         |         |         |
  0+55       0.0102      0.01  OI        |         |         |         |
  1+ 0       0.0115      0.01  OI        |         |         |         |
  1+ 5       0.0129      0.02  |O        |         |         |         |
  1+10       0.0144      0.02  |O        |         |         |         |
  1+15       0.0159      0.02  |O        |         |         |         |
  1+20       0.0175      0.02  |O        |         |         |         |
  1+25       0.0190      0.02  |O        |         |         |         |
  1+30       0.0205      0.02  |O        |         |         |         |
  1+35       0.0221      0.02  |O        |         |         |         |
  1+40       0.0236      0.03  |OI       |         |         |         |
  1+45       0.0251      0.03  | O       |         |         |         |
  1+50       0.0265      0.03  | O       |         |         |         |
  1+55       0.0280      0.03  | O       |         |         |         |
  2+ 0       0.0294      0.03  | O       |         |         |         |
  2+ 5       0.0309      0.03  | O       |         |         |         |
  2+10       0.0324      0.03  | O       |         |         |         |
  2+15       0.0340      0.04  | O       |         |         |         |
  2+20       0.0355      0.04  | OI      |         |         |         |
  2+25       0.0371      0.04  |  O      |         |         |         |
  2+30       0.0388      0.04  |  O      |         |         |         |
  2+35       0.0404      0.04  |  O      |         |         |         |
  2+40       0.0420      0.04  |  O      |         |         |         |
  2+45       0.0436      0.05  |  O      |         |         |         |
  2+50       0.0452      0.05  |  O      |         |         |         |
  2+55       0.0469      0.05  |  OI     |         |         |         |
  3+ 0       0.0487      0.05  |  OI     |         |         |         |
  3+ 5       0.0504      0.05  |   O     |         |         |         |
  3+10       0.0522      0.06  |   O     |         |         |         |
  3+15       0.0540      0.06  |   O     |         |         |         |
  3+20       0.0560      0.06  |   O     |         |         |         |
  3+25       0.0579      0.06  |   O     |         |         |         |
  3+30       0.0600      0.06  |   OI    |         |         |         |
  3+35       0.0621      0.06  |    O    |         |         |         |
  3+40       0.0636      0.06  |    O    |         |         |         |
  3+45       0.0641      0.06  |    O    |         |         |         |
  3+50       0.0642      0.06  |    O    |         |         |         |
  3+55       0.0643      0.06  |    O    |         |         |         |
  4+ 0       0.0643      0.06  |    O    |         |         |         |
  4+ 5       0.0643      0.06  |    O    |         |         |         |
  4+10       0.0643      0.06  |    O    |         |         |         |
```

```
   4+15       0.0643      0.06  |    O    |         |         |         |
   4+20       0.0643      0.06  |    O    |         |         |         |
   4+25       0.0643      0.06  |    O    |         |         |         |
   4+30       0.0643      0.06  |    O    |         |         |         |
   4+35       0.0643      0.06  |    O    |         |         |         |
   4+40       0.0643      0.06  |    O    |         |         |         |
   4+45       0.0643      0.06  |    O    |         |         |         |
   4+50       0.0643      0.06  |    O    |         |         |         |
   4+55       0.0643      0.06  |    O    |         |         |         |
   5+ 0       0.0643      0.06  |    O    |         |         |         |
   5+ 5       0.0643      0.06  |    O    |         |         |         |
   5+10       0.0643      0.06  |    O    |         |         |         |
   5+15       0.0643      0.06  |    O    |         |         |         |
   5+20       0.0643      0.06  |    O    |         |         |         |
   5+25       0.0645      0.21  |    O    |      I  |         |         |
   5+30       0.1579      0.36  |         | O       |        I|         |
   5+35       0.2897      0.47  |         |         |  O      |       I |
   5+40       0.4060      0.49  |         |         |         |  O      I
   5+45       0.4592      0.45  |         |         |         |      O  |
   5+50       0.4561      0.41  |         |         |         |  I   O  |
   5+55       0.4249      0.36  |         |         |        I|   O     |
   6+ 0       0.3831      0.31  |         |         |    I    |O        |
   6+ 5       0.3380      0.27  |         |         | I    O  |         |
   6+10       0.2939      0.23  |         |       I |   O     |         |
   6+15       0.2534      0.20  |         |     I   O         |         |
   6+20       0.2178      0.17  |         |  I   O  |         |         |
   6+25       0.1869      0.15  |         |I   O    |         |         |
   6+30       0.1603      0.12  |         I  O      |         |         |
   6+35       0.1374      0.11  |       I |O        |         |         |
   6+40       0.1178      0.09  |      I O|         |         |         |
   6+45       0.1009      0.00  I       O |         |         |         |
   6+50       0.0362      0.00  I O       |         |         |         |
   6+55       0.0130      0.00  IO        |         |         |         |
   7+ 0       0.0047      0.00  O         |         |         |         |
   7+ 5       0.0017      0.00  O         |         |         |         |
   7+10       0.0000      0.00  O         |         |         |         |
-------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =    86
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        0.459 (CFS)
                 Total volume =       0.048 (Ac.Ft)
           Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      401.100 to Point/Station       10.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259DPOND106.rte
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =     0
                 Time interval =    0.0 (Min.)
                 Maximum/Peak flow rate =        0.000 (CFS)
                 Total volume =       0.000 (Ac.Ft)
           Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 01/27/18

----------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA D (Pond D)- Q10yr24hr(ONSITE)- Unit Hydrograph Method

---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHD2410.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =   290
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.458 (CFS)
             Total volume =       0.225 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      401.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   0.50(Ft.)    Capacity =   0.06(CFS)

Total outflow at this depth =      0.06(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.25(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.75(Ft.)    Capacity =   0.06(CFS)
```

Total outflow at this depth = 0.06(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.40(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.16(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.16(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.90(Ft.) Capacity = 0.06(CFS)

Free outlet pipe flow: Pipe Diameter = 1.00(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.15(Ft.) Capacity = 2.43(CFS)

Total outflow at this depth = 2.50(CFS)

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.042	0.064	0.042	0.042
3.250	0.113	0.064	0.113	0.113
4.400	0.222	2.498	0.213	0.231

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.1	0.23	0.34	0.46	Depth (Ft.)
0.083	0.01	0.00	0.000	OI	|	|	|	|	0.00
0.167	0.02	0.00	0.000	OI	|	|	|	|	0.00
0.250	0.02	0.00	0.000	OI	|	|	|	|	0.01
0.333	0.03	0.00	0.001	O I	|	|	|	|	0.01
0.417	0.04	0.00	0.001	O I	|	|	|	|	0.02
0.500	0.04	0.00	0.001	O I	|	|	|	|	0.02
0.583	0.04	0.00	0.001	O I	|	|	|	|	0.03
0.667	0.04	0.00	0.001	O I	|	|	|	|	0.04
0.750	0.04	0.00	0.002	O I	|	|	|	|	0.04
0.833	0.04	0.00	0.002	O I	|	|	|	|	0.05
0.917	0.05	0.00	0.002	O I	|	|	|	|	0.05
1.000	0.05	0.00	0.003	O I	|	|	|	|	0.06
1.083	0.04	0.00	0.003	O I	|	|	|	|	0.07
1.167	0.04	0.00	0.003	O I	|	|	|	|	0.07
1.250	0.04	0.01	0.003	O I	|	|	|	|	0.08
1.333	0.04	0.01	0.004	O I	|	|	|	|	0.08
1.417	0.04	0.01	0.004	O I	|	|	|	|	0.09
1.500	0.04	0.01	0.004	O I	|	|	|	|	0.09

```
1.583    0.04    0.01      0.004  O I     |       |       |       |     0.10
1.667    0.04    0.01      0.004  O I     |       |       |       |     0.10
1.750    0.04    0.01      0.005  O I     |       |       |       |     0.11
1.833    0.04    0.01      0.005  O  I    |       |       |       |     0.11
1.917    0.05    0.01      0.005  O  I    |       |       |       |     0.12
2.000    0.05    0.01      0.005  O  I    |       |       |       |     0.13
2.083    0.05    0.01      0.006  O  I    |       |       |       |     0.13
2.167    0.05    0.01      0.006  O  I    |       |       |       |     0.14
2.250    0.05    0.01      0.006  O  I    |       |       |       |     0.15
2.333    0.05    0.01      0.006  O  I    |       |       |       |     0.15
2.417    0.05    0.01      0.007  O  I    |       |       |       |     0.16
2.500    0.05    0.01      0.007  O  I    |       |       |       |     0.17
2.583    0.06    0.01      0.007  O  I    |       |       |       |     0.17
2.667    0.06    0.01      0.008  O   I   |       |       |       |     0.18
2.750    0.06    0.01      0.008  O   I   |       |       |       |     0.19
2.833    0.06    0.01      0.008  O   I   |       |       |       |     0.20
2.917    0.06    0.01      0.009  O   I   |       |       |       |     0.20
3.000    0.06    0.01      0.009  O   I   |       |       |       |     0.21
3.083    0.06    0.01      0.009  O   I   |       |       |       |     0.22
3.167    0.06    0.01      0.010  |O  I   |       |       |       |     0.23
3.250    0.06    0.02      0.010  |O  I   |       |       |       |     0.24
3.333    0.06    0.02      0.010  |O  I   |       |       |       |     0.24
3.417    0.06    0.02      0.011  |O  I   |       |       |       |     0.25
3.500    0.06    0.02      0.011  |O  I   |       |       |       |     0.26
3.583    0.06    0.02      0.011  |O  I   |       |       |       |     0.26
3.667    0.06    0.02      0.011  |O  I   |       |       |       |     0.27
3.750    0.06    0.02      0.012  |O  I   |       |       |       |     0.28
3.833    0.03    0.02      0.012  |O      |       |       |       |     0.28
3.917    0.01    0.02      0.012  IO      |       |       |       |     0.28
4.000    0.01    0.02      0.012  IO      |       |       |       |     0.28
4.083    0.01    0.02      0.012  IO      |       |       |       |     0.28
4.167    0.01    0.02      0.012  IO      |       |       |       |     0.28
4.250    0.01    0.02      0.012  IO      |       |       |       |     0.28
4.333    0.02    0.02      0.012  |O      |       |       |       |     0.28
4.417    0.02    0.02      0.012  |O      |       |       |       |     0.28
4.500    0.03    0.02      0.012  |O      |       |       |       |     0.28
4.583    0.03    0.02      0.012  |O      |       |       |       |     0.28
4.667    0.03    0.02      0.012  |O      |       |       |       |     0.28
4.750    0.03    0.02      0.012  |O      |       |       |       |     0.28
4.833    0.04    0.02      0.012  |OI     |       |       |       |     0.28
4.917    0.04    0.02      0.012  |OI     |       |       |       |     0.29
5.000    0.04    0.02      0.012  |OI     |       |       |       |     0.29
5.083    0.02    0.02      0.012  |O      |       |       |       |     0.29
5.167    0.01    0.02      0.012  |O      |       |       |       |     0.29
5.250    0.01    0.02      0.012  IO      |       |       |       |     0.29
5.333    0.02    0.02      0.012  |O      |       |       |       |     0.29
5.417    0.03    0.02      0.012  |O      |       |       |       |     0.29
5.500    0.03    0.02      0.012  |OI     |       |       |       |     0.30
5.583    0.04    0.02      0.013  |OI     |       |       |       |     0.30
5.667    0.04    0.02      0.013  |O I    |       |       |       |     0.30
5.750    0.05    0.02      0.013  |O I    |       |       |       |     0.31
5.833    0.05    0.02      0.013  |O I    |       |       |       |     0.31
5.917    0.05    0.02      0.013  |O I    |       |       |       |     0.31
6.000    0.05    0.02      0.013  |O I    |       |       |       |     0.32
6.083    0.06    0.02      0.014  |O I    |       |       |       |     0.32
6.167    0.06    0.02      0.014  |O  I   |       |       |       |     0.33
6.250    0.06    0.02      0.014  |O  I   |       |       |       |     0.34
6.333    0.06    0.02      0.014  |O  I   |       |       |       |     0.34
6.417    0.06    0.02      0.015  |O  I   |       |       |       |     0.35
6.500    0.06    0.02      0.015  |O  I   |       |       |       |     0.36
6.583    0.07    0.02      0.015  |O   I  |       |       |       |     0.36
6.667    0.08    0.02      0.016  |O   I  |       |       |       |     0.37
6.750    0.08    0.02      0.016  |O   I  |       |       |       |     0.38
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 6.833    0.08    0.03      0.016  |O   I  |       |       |       |     0.39
 6.917    0.08    0.03      0.017  |O   I  |       |       |       |     0.40
 7.000    0.08    0.03      0.017  |O   I  |       |       |       |     0.41
 7.083    0.08    0.03      0.017  |O   I  |       |       |       |     0.42
 7.167    0.08    0.03      0.018  |O   I  |       |       |       |     0.42
 7.250    0.08    0.03      0.018  |O   I  |       |       |       |     0.43
 7.333    0.09    0.03      0.019  |O    I |       |       |       |     0.44
 7.417    0.10    0.03      0.019  | O   I |       |       |       |     0.45
 7.500    0.10    0.03      0.019  | O   I |       |       |       |     0.46
 7.583    0.11    0.03      0.020  | O    I|       |       |       |     0.48
 7.667    0.11    0.03      0.021  | O    I|       |       |       |     0.49
 7.750    0.11    0.03      0.021  | O    I|       |       |       |     0.50
 7.833    0.12    0.03      0.022  | O     I       |       |       |     0.52
 7.917    0.13    0.03      0.022  | O     I       |       |       |     0.53
 8.000    0.13    0.04      0.023  | O     I       |       |       |     0.55
 8.083    0.15    0.04      0.024  | O     | I     |       |       |     0.56
 8.167    0.16    0.04      0.024  | O     | I     |       |       |     0.58
 8.250    0.16    0.04      0.025  | O     |  I    |       |       |     0.60
 8.333    0.16    0.04      0.026  | O     |  I    |       |       |     0.62
 8.417    0.16    0.04      0.027  | O     |  I    |       |       |     0.64
 8.500    0.16    0.04      0.028  | O     |  I    |       |       |     0.66
 8.583    0.17    0.04      0.029  |  O    |  I    |       |       |     0.68
 8.667    0.17    0.05      0.029  |  O    |   I   |       |       |     0.70
 8.750    0.18    0.05      0.030  |  O    |   I   |       |       |     0.72
 8.833    0.18    0.05      0.031  |  O    |   I   |       |       |     0.74
 8.917    0.19    0.05      0.032  |  O    |    I  |       |       |     0.77
 9.000    0.19    0.05      0.033  |  O    |    I  |       |       |     0.79
 9.083    0.21    0.05      0.034  |  O    |     I |       |       |     0.81
 9.167    0.22    0.05      0.035  |  O    |      I|       |       |     0.84
 9.250    0.22    0.06      0.036  |  O    |      I|       |       |     0.87
 9.333    0.23    0.06      0.038  |   O   |       I       |       |     0.89
 9.417    0.24    0.06      0.039  |   O   |       I       |       |     0.92
 9.500    0.24    0.06      0.040  |   O   |       I       |       |     0.95
 9.583    0.25    0.06      0.041  |   O   |       |I      |       |     0.98
 9.667    0.25    0.06      0.043  |   O   |       |I      |       |     1.02
 9.750    0.25    0.06      0.044  |   O   |       |I      |       |     1.06
 9.833    0.26    0.06      0.045  |   O   |       | I     |       |     1.10
 9.917    0.27    0.06      0.047  |   O   |       | I     |       |     1.14
10.000    0.27    0.06      0.048  |   O   |       | I     |       |     1.19
10.083    0.21    0.06      0.049  |   O   |     I |       |       |     1.23
10.167    0.17    0.06      0.050  |   O   |  I    |       |       |     1.25
10.250    0.17    0.06      0.051  |   O   |  I    |       |       |     1.28
10.333    0.17    0.06      0.051  |   O   |  I    |       |       |     1.30
10.417    0.17    0.06      0.052  |   O   |  I    |       |       |     1.32
10.500    0.17    0.06      0.053  |   O   |  I    |       |       |     1.34
10.583    0.21    0.06      0.054  |   O   |     I |       |       |     1.37
10.667    0.24    0.06      0.055  |   O   |       I       |       |     1.40
10.750    0.24    0.06      0.056  |   O   |       I       |       |     1.44
10.833    0.24    0.06      0.057  |   O   |       I       |       |     1.48
10.917    0.24    0.06      0.058  |   O   |       I       |       |     1.52
11.000    0.24    0.06      0.060  |   O   |       I       |       |     1.56
11.083    0.23    0.06      0.061  |   O   |       I       |       |     1.60
11.167    0.23    0.06      0.062  |   O   |      I|       |       |     1.63
11.250    0.23    0.06      0.063  |   O   |      I|       |       |     1.67
11.333    0.23    0.06      0.064  |   O   |      I|       |       |     1.71
11.417    0.23    0.06      0.065  |   O   |      I|       |       |     1.74
11.500    0.23    0.06      0.067  |   O   |       I       |       |     1.78
11.583    0.21    0.06      0.068  |   O   |     I |       |       |     1.81
11.667    0.20    0.06      0.069  |   O   |     I |       |       |     1.84
11.750    0.20    0.06      0.070  |   O   |    I  |       |       |     1.87
11.833    0.21    0.06      0.070  |   O   |     I |       |       |     1.90
11.917    0.22    0.06      0.072  |   O   |      I|       |       |     1.93
12.000    0.22    0.06      0.073  |   O   |      I|       |       |     1.97
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12.083    0.28    0.06      0.074  |   O   |       |  I    |       |     2.01
12.167    0.32    0.06      0.075  |   O   |       |     I |       |     2.06
12.250    0.32    0.06      0.077  |   O   |       |     I |       |     2.11
12.333    0.33    0.06      0.079  |   O   |       |      I|       |     2.17
12.417    0.34    0.06      0.081  |   O   |       |      I|       |     2.23
12.500    0.34    0.06      0.083  |   O   |       |      I|       |     2.29
12.583    0.35    0.06      0.085  |   O   |       |       I       |     2.35
12.667    0.37    0.06      0.087  |   O   |       |       |I      |     2.42
12.750    0.37    0.06      0.089  |   O   |       |       |I      |     2.48
12.833    0.38    0.06      0.091  |   O   |       |       | I     |     2.55
12.917    0.38    0.06      0.093  |   O   |       |       | I     |     2.62
13.000    0.38    0.06      0.095  |   O   |       |       | I     |     2.69
13.083    0.43    0.06      0.098  |   O   |       |       |    I  |     2.76
13.167    0.45    0.06      0.100  |   O   |       |       |      I|     2.84
13.250    0.46    0.06      0.103  |   O   |       |       |      I|     2.93
13.333    0.46    0.06      0.106  |   O   |       |       |      I|     3.01
13.417    0.46    0.06      0.108  |   O   |       |       |      I|     3.10
13.500    0.46    0.06      0.111  |   O   |       |       |       I     3.19
13.583    0.36    0.07      0.113  |    O  |       |       |I      |     3.25
13.667    0.30    0.11      0.115  |      O|       |    I  |       |     3.27
13.750    0.30    0.14      0.116  |       |O      |   I   |       |     3.28
13.833    0.30    0.16      0.117  |       |  O    |   I   |       |     3.29
13.917    0.30    0.18      0.118  |       |   O   |   I   |       |     3.30
14.000    0.30    0.20      0.119  |       |    O  |   I   |       |     3.31
14.083    0.33    0.21      0.120  |       |     O |      I|       |     3.32
14.167    0.35    0.23      0.120  |       |       O       I       |     3.33
14.250    0.36    0.25      0.121  |       |       |O      I       |     3.34
14.333    0.35    0.26      0.122  |       |       | O     I       |     3.34
14.417    0.34    0.28      0.122  |       |       |  O   I|       |     3.35
14.500    0.34    0.28      0.123  |       |       |  O   I|       |     3.35
14.583    0.34    0.29      0.123  |       |       |   O  I|       |     3.36
14.667    0.34    0.30      0.124  |       |       |   O  I|       |     3.36
14.750    0.34    0.31      0.124  |       |       |    O I|       |     3.36
14.833    0.33    0.31      0.124  |       |       |    O I|       |     3.37
14.917    0.33    0.31      0.124  |       |       |    OI |       |     3.37
15.000    0.33    0.32      0.124  |       |       |     O |       |     3.37
15.083    0.32    0.32      0.124  |       |       |     O |       |     3.37
15.167    0.31    0.32      0.124  |       |       |    IO |       |     3.37
15.250    0.31    0.32      0.124  |       |       |    IO |       |     3.37
15.333    0.31    0.32      0.124  |       |       |    IO |       |     3.37
15.417    0.30    0.31      0.124  |       |       |   IO  |       |     3.37
15.500    0.30    0.31      0.124  |       |       |   IO  |       |     3.37
15.583    0.26    0.31      0.124  |       |       | I  O  |       |     3.37
15.667    0.24    0.30      0.124  |       |       |I  O   |       |     3.36
15.750    0.24    0.29      0.123  |       |       I   O   |       |     3.36
15.833    0.24    0.28      0.123  |       |       I  O    |       |     3.35
15.917    0.24    0.28      0.123  |       |       I  O    |       |     3.35
16.000    0.24    0.27      0.122  |       |       I  O    |       |     3.35
16.083    0.11    0.26      0.122  |      I|       | O     |       |     3.34
16.167    0.03    0.23      0.120  | I     |       O       |       |     3.33
16.250    0.02    0.20      0.119  |I      |     O |       |       |     3.32
16.333    0.02    0.18      0.118  |I      |   O   |       |       |     3.30
16.417    0.02    0.15      0.117  |I      | O     |       |       |     3.29
16.500    0.02    0.13      0.116  |I      |O      |       |       |     3.28
16.583    0.01    0.12      0.115  I       O       |       |       |     3.28
16.667    0.01    0.10      0.115  I      O|       |       |       |     3.27
16.750    0.01    0.09      0.114  I     O |       |       |       |     3.26
16.833    0.01    0.08      0.114  I    O  |       |       |       |     3.26
16.917    0.01    0.07      0.113  I   O   |       |       |       |     3.25
17.000    0.01    0.06      0.113  I   O   |       |       |       |     3.24
17.083    0.02    0.06      0.112  |I  O   |       |       |       |     3.23
17.167    0.04    0.06      0.112  | I O   |       |       |       |     3.22
17.250    0.04    0.06      0.112  | I O   |       |       |       |     3.22
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17.333	0.04	0.06	0.112	| I	O	|	|	|	3.21
17.417	0.04	0.06	0.112	| I	O	|	|	|	3.20
17.500	0.04	0.06	0.111	| I	O	|	|	|	3.20
17.583	0.04	0.06	0.111	| I	O	|	|	|	3.19
17.667	0.04	0.06	0.111	| I	O	|	|	|	3.19
17.750	0.04	0.06	0.111	| I	O	|	|	|	3.18
17.833	0.03	0.06	0.111	| I	O	|	|	|	3.17
17.917	0.02	0.06	0.110	|I	O	|	|	|	3.17
18.000	0.02	0.06	0.110	|I	O	|	|	|	3.16
18.083	0.02	0.06	0.110	|I	O	|	|	|	3.15
18.167	0.02	0.06	0.110	|I	O	|	|	|	3.14
18.250	0.02	0.06	0.109	|I	O	|	|	|	3.13
18.333	0.02	0.06	0.109	|I	O	|	|	|	3.12
18.417	0.02	0.06	0.109	|I	O	|	|	|	3.11
18.500	0.02	0.06	0.108	|I	O	|	|	|	3.10
18.583	0.02	0.06	0.108	|I	O	|	|	|	3.09
18.667	0.01	0.06	0.108	I	O	|	|	|	3.08
18.750	0.01	0.06	0.107	I	O	|	|	|	3.07
18.833	0.02	0.06	0.107	|I	O	|	|	|	3.06
18.917	0.02	0.06	0.107	|I	O	|	|	|	3.05
19.000	0.02	0.06	0.106	|I	O	|	|	|	3.04
19.083	0.02	0.06	0.106	|I	O	|	|	|	3.03
19.167	0.01	0.06	0.106	I	O	|	|	|	3.02
19.250	0.01	0.06	0.105	I	O	|	|	|	3.01
19.333	0.02	0.06	0.105	|I	O	|	|	|	3.00
19.417	0.03	0.06	0.105	|I	O	|	|	|	2.99
19.500	0.03	0.06	0.105	|I	O	|	|	|	2.98
19.583	0.02	0.06	0.104	|I	O	|	|	|	2.97
19.667	0.01	0.06	0.104	I	O	|	|	|	2.96
19.750	0.01	0.06	0.104	I	O	|	|	|	2.95
19.833	0.02	0.06	0.103	|I	O	|	|	|	2.94
19.917	0.02	0.06	0.103	|I	O	|	|	|	2.93
20.000	0.02	0.06	0.103	|I	O	|	|	|	2.92
20.083	0.02	0.06	0.102	|I	O	|	|	|	2.91
20.167	0.01	0.06	0.102	I	O	|	|	|	2.90
20.250	0.01	0.06	0.102	I	O	|	|	|	2.89
20.333	0.01	0.06	0.101	I	O	|	|	|	2.88
20.417	0.01	0.06	0.101	I	O	|	|	|	2.87
20.500	0.01	0.06	0.101	I	O	|	|	|	2.86
20.583	0.01	0.06	0.100	I	O	|	|	|	2.85
20.667	0.01	0.06	0.100	I	O	|	|	|	2.84
20.750	0.01	0.06	0.100	I	O	|	|	|	2.82
20.833	0.02	0.06	0.099	|I	O	|	|	|	2.81
20.917	0.02	0.06	0.099	|I	O	|	|	|	2.81
21.000	0.02	0.06	0.099	|I	O	|	|	|	2.80
21.083	0.02	0.06	0.098	|I	O	|	|	|	2.79
21.167	0.01	0.06	0.098	|I	O	|	|	|	2.78
21.250	0.01	0.06	0.098	|I	O	|	|	|	2.77
21.333	0.02	0.06	0.097	|I	O	|	|	|	2.76
21.417	0.02	0.06	0.097	|I	O	|	|	|	2.75
21.500	0.01	0.06	0.097	I	O	|	|	|	2.74
21.583	0.01	0.06	0.096	I	O	|	|	|	2.72
21.667	0.01	0.06	0.096	|I	O	|	|	|	2.71
21.750	0.02	0.06	0.096	|I	O	|	|	|	2.70
21.833	0.01	0.06	0.095	I	O	|	|	|	2.69
21.917	0.00	0.06	0.095	I	O	|	|	|	2.68
22.000	0.00	0.06	0.094	I	O	|	|	|	2.66
22.083	0.01	0.06	0.094	I	O	|	|	|	2.65
22.167	0.02	0.06	0.094	|I	O	|	|	|	2.64
22.250	0.02	0.06	0.093	|I	O	|	|	|	2.63
22.333	0.01	0.06	0.093	I	O	|	|	|	2.62
22.417	0.00	0.06	0.093	I	O	|	|	|	2.60
22.500	0.00	0.06	0.092	I	O	|	|	|	2.59

22.583	0.00	0.06	0.092	I	O	|	|	|	|	2.58
22.667	0.00	0.06	0.091	I	O	|	|	|	|	2.56
22.750	0.00	0.06	0.091	I	O	|	|	|	|	2.55
22.833	0.00	0.06	0.090	I	O	|	|	|	|	2.53
22.917	0.00	0.06	0.090	I	O	|	|	|	|	2.52
23.000	0.00	0.06	0.090	I	O	|	|	|	|	2.51
23.083	0.00	0.06	0.089	I	O	|	|	|	|	2.49
23.167	0.00	0.06	0.089	I	O	|	|	|	|	2.48
23.250	0.00	0.06	0.088	I	O	|	|	|	|	2.47
23.333	0.00	0.06	0.088	I	O	|	|	|	|	2.45
23.417	0.00	0.06	0.087	I	O	|	|	|	|	2.44
23.500	0.00	0.06	0.087	I	O	|	|	|	|	2.43
23.583	0.00	0.06	0.087	I	O	|	|	|	|	2.41
23.667	0.00	0.06	0.086	I	O	|	|	|	|	2.40
23.750	0.00	0.06	0.086	I	O	|	|	|	|	2.38
23.833	0.00	0.06	0.085	I	O	|	|	|	|	2.37
23.917	0.00	0.06	0.085	I	O	|	|	|	|	2.36
24.000	0.00	0.06	0.084	I	O	|	|	|	|	2.34
24.083	0.00	0.06	0.084	I	O	|	|	|	|	2.33
24.167	0.00	0.06	0.084	I	O	|	|	|	|	2.32
24.250	0.00	0.06	0.083	I	O	|	|	|	|	2.30

Remaining water in basin = 0.08 (Ac.Ft)

```
****************************HYDROGRAPH DATA****************************
             Number of intervals =   291
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        0.317 (CFS)
             Total volume =       0.142 (Ac.Ft)
      Status of hydrographs being held in storage
                 Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
***********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.100 to Point/Station       10.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =   1426.00 (Ft.)
Elevation difference =   12.55 (Ft.)
Slope of channel =  0.008801 (Vert/Horiz)
Channel type - Pipe


Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.072(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.072(CFS)
Normal flow depth in pipe =    2.18(In.)
Flow top width inside pipe =    2.67(In.)
Critical Depth =    0.16(Ft.)
Pipe flow velocity =      1.91(Ft/s)
Travel time through pipe =   12.47 min.
```

```
Pipe length  =  1426.00(Ft.)   Elevation difference =  12.55(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     0.317(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.317(CFS)
Normal flow depth in pipe =    3.35(In.)
Flow top width inside pipe =    5.96(In.)
Critical Depth =    0.28(Ft.)
Pipe flow velocity =      2.80(Ft/s)
Travel time through pipe =    8.48 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.6224   Travel time =   8.48 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   0.9648
       dt(routing time-step) =   5.28 (min.),   c* =   0.6093

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

-------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.1       0.2       0.2       0.3
-------------------------------------------------------------------
  0+ 5       0.0000      0.00  O         |         |         |         |
  0+10       0.0001      0.00  O         |         |         |         |
  0+15       0.0002      0.00  O         |         |         |         |
  0+20       0.0004      0.00  O         |         |         |         |
  0+25       0.0007      0.00  O         |         |         |         |
  0+30       0.0010      0.00  O         |         |         |         |
  0+35       0.0013      0.00  O         |         |         |         |
  0+40       0.0017      0.00  O         |         |         |         |
  0+45       0.0021      0.00  O         |         |         |         |
  0+50       0.0024      0.00  O         |         |         |         |
  0+55       0.0028      0.00  O         |         |         |         |
  1+ 0       0.0032      0.00  O         |         |         |         |
  1+ 5       0.0037      0.00  O         |         |         |         |
  1+10       0.0041      0.00  O         |         |         |         |
  1+15       0.0045      0.01  O         |         |         |         |
  1+20       0.0049      0.01  O         |         |         |         |
  1+25       0.0052      0.01  O         |         |         |         |
  1+30       0.0055      0.01  O         |         |         |         |
  1+35       0.0059      0.01  O         |         |         |         |
  1+40       0.0062      0.01  O         |         |         |         |
  1+45       0.0065      0.01  O         |         |         |         |
  1+50       0.0068      0.01  O         |         |         |         |
  1+55       0.0072      0.01  O         |         |         |         |
  2+ 0       0.0075      0.01  OI        |         |         |         |
  2+ 5       0.0080      0.01  |O        |         |         |         |
  2+10       0.0084      0.01  |O        |         |         |         |
  2+15       0.0088      0.01  |O        |         |         |         |
  2+20       0.0092      0.01  |O        |         |         |         |
```

```
2+25       0.0096      0.01  |O        |         |         |         |
2+30       0.0100      0.01  |O        |         |         |         |
2+35       0.0104      0.01  |O        |         |         |         |
2+40       0.0109      0.01  |O        |         |         |         |
2+45       0.0113      0.01  |O        |         |         |         |
2+50       0.0118      0.01  |O        |         |         |         |
2+55       0.0124      0.01  |O        |         |         |         |
3+ 0       0.0129      0.01  |O        |         |         |         |
3+ 5       0.0134      0.01  |O        |         |         |         |
3+10       0.0139      0.01  |O        |         |         |         |
3+15       0.0144      0.02  |O        |         |         |         |
3+20       0.0148      0.02  |O        |         |         |         |
3+25       0.0153      0.02  |OI       |         |         |         |
3+30       0.0158      0.02  |OI       |         |         |         |
3+35       0.0163      0.02  | O       |         |         |         |
3+40       0.0167      0.02  | O       |         |         |         |
3+45       0.0172      0.02  | O       |         |         |         |
3+50       0.0177      0.02  | O       |         |         |         |
3+55       0.0180      0.02  | O       |         |         |         |
4+ 0       0.0181      0.02  | O       |         |         |         |
4+ 5       0.0181      0.02  | O       |         |         |         |
4+10       0.0181      0.02  | O       |         |         |         |
4+15       0.0180      0.02  | O       |         |         |         |
4+20       0.0179      0.02  | O       |         |         |         |
4+25       0.0179      0.02  | O       |         |         |         |
4+30       0.0179      0.02  | O       |         |         |         |
4+35       0.0179      0.02  | O       |         |         |         |
4+40       0.0180      0.02  | O       |         |         |         |
4+45       0.0180      0.02  | O       |         |         |         |
4+50       0.0181      0.02  | O       |         |         |         |
4+55       0.0182      0.02  | O       |         |         |         |
5+ 0       0.0184      0.02  | O       |         |         |         |
5+ 5       0.0186      0.02  | O       |         |         |         |
5+10       0.0188      0.02  | O       |         |         |         |
5+15       0.0189      0.02  | O       |         |         |         |
5+20       0.0189      0.02  | O       |         |         |         |
5+25       0.0189      0.02  | O       |         |         |         |
5+30       0.0189      0.02  | O       |         |         |         |
5+35       0.0190      0.02  | O       |         |         |         |
5+40       0.0191      0.02  | O       |         |         |         |
5+45       0.0193      0.02  | O       |         |         |         |
5+50       0.0196      0.02  | O       |         |         |         |
5+55       0.0198      0.02  | O       |         |         |         |
6+ 0       0.0201      0.02  | O       |         |         |         |
6+ 5       0.0204      0.02  | O       |         |         |         |
6+10       0.0207      0.02  | O       |         |         |         |
6+15       0.0210      0.02  | O       |         |         |         |
6+20       0.0214      0.02  | O       |         |         |         |
6+25       0.0218      0.02  | O       |         |         |         |
6+30       0.0222      0.02  | O       |         |         |         |
6+35       0.0227      0.02  | O       |         |         |         |
6+40       0.0231      0.02  | OI      |         |         |         |
6+45       0.0236      0.02  | OI      |         |         |         |
6+50       0.0242      0.03  |  O      |         |         |         |
6+55       0.0247      0.03  |  O      |         |         |         |
7+ 0       0.0253      0.03  |  O      |         |         |         |
7+ 5       0.0259      0.03  |  O      |         |         |         |
7+10       0.0264      0.03  |  O      |         |         |         |
7+15       0.0270      0.03  |  O      |         |         |         |
7+20       0.0276      0.03  |  O      |         |         |         |
7+25       0.0282      0.03  |  O      |         |         |         |
7+30       0.0288      0.03  |  O      |         |         |         |
7+35       0.0295      0.03  |  O      |         |         |         |
```

7+40	0.0302	0.03	O			
7+45	0.0310	0.03	OI			
7+50	0.0318	0.03	O			
7+55	0.0327	0.03	O			
8+ 0	0.0336	0.04	O			
8+ 5	0.0345	0.04	O			
8+10	0.0356	0.04	O			
8+15	0.0367	0.04	O			
8+20	0.0379	0.04	OI			
8+25	0.0392	0.04	OI			
8+30	0.0404	0.04	O			
8+35	0.0417	0.04	O			
8+40	0.0430	0.05	O			
8+45	0.0443	0.05	O			
8+50	0.0456	0.05	OI			
8+55	0.0470	0.05	OI			
9+ 0	0.0484	0.05	O			
9+ 5	0.0499	0.05	O			
9+10	0.0514	0.05	O			
9+15	0.0531	0.06	OI			
9+20	0.0548	0.06	OI			
9+25	0.0565	0.06	O			
9+30	0.0584	0.06	O			
9+35	0.0602	0.06	O			
9+40	0.0621	0.06	OI			
9+45	0.0634	0.06	O			
9+50	0.0640	0.06	O			
9+55	0.0642	0.06	O			
10+ 0	0.0643	0.06	O			
10+ 5	0.0643	0.06	O			
10+10	0.0643	0.06	O			
10+15	0.0643	0.06	O			
10+20	0.0643	0.06	O			
10+25	0.0643	0.06	O			
10+30	0.0643	0.06	O			
10+35	0.0643	0.06	O			
10+40	0.0643	0.06	O			
10+45	0.0643	0.06	O			
10+50	0.0643	0.06	O			
10+55	0.0643	0.06	O			
11+ 0	0.0643	0.06	O			
11+ 5	0.0643	0.06	O			
11+10	0.0643	0.06	O			
11+15	0.0643	0.06	O			
11+20	0.0643	0.06	O			
11+25	0.0643	0.06	O			
11+30	0.0643	0.06	O			
11+35	0.0643	0.06	O			
11+40	0.0643	0.06	O			
11+45	0.0643	0.06	O			
11+50	0.0643	0.06	O			
11+55	0.0643	0.06	O			
12+ 0	0.0643	0.06	O			
12+ 5	0.0643	0.06	O			
12+10	0.0643	0.06	O			
12+15	0.0643	0.06	O			
12+20	0.0643	0.06	O			
12+25	0.0643	0.06	O			
12+30	0.0643	0.06	O			
12+35	0.0643	0.06	O			
12+40	0.0643	0.06	O			
12+45	0.0643	0.06	O			
12+50	0.0643	0.06	O			

```
12+55       0.0643      0.06  |       O |         |         |         |
13+ 0       0.0643      0.06  |       O |         |         |         |
13+ 5       0.0643      0.06  |       O |         |         |         |
13+10       0.0643      0.06  |       O |         |         |         |
13+15       0.0643      0.06  |       O |         |         |         |
13+20       0.0643      0.06  |       O |         |         |         |
13+25       0.0643      0.06  |       O |         |         |         |
13+30       0.0643      0.06  |       O |         |         |         |
13+35       0.0646      0.07  |       OI|         |         |         |
13+40       0.0701      0.11  |       O |  I      |         |         |
13+45       0.0945      0.14  |         |O     I  |         |         |
13+50       0.1204      0.16  |         |    O    I         |         |
13+55       0.1443      0.18  |         |       O | I       |         |
14+ 0       0.1655      0.20  |         |         O   I     |         |
14+ 5       0.1841      0.21  |         |         |  O  I   |         |
14+10       0.2018      0.23  |         |         |    O   I|         |
14+15       0.2200      0.25  |         |         |      O  |I        |
14+20       0.2379      0.26  |         |         |         O  I      |
14+25       0.2538      0.28  |         |         |         | O I     |
14+30       0.2670      0.28  |         |         |         |  O I    |
14+35       0.2780      0.29  |         |         |         |    OI   |
14+40       0.2873      0.30  |         |         |         |     OI  |
14+45       0.2952      0.31  |         |         |         |      OI |
14+50       0.3020      0.31  |         |         |         |       OI|
14+55       0.3074      0.31  |         |         |         |       OI|
15+ 0       0.3113      0.32  |         |         |         |        O|
15+ 5       0.3141      0.32  |         |         |         |        O|
15+10       0.3159      0.32  |         |         |         |        OI
15+15       0.3166      0.32  |         |         |         |        O|
15+20       0.3167      0.32  |         |         |         |        O|
15+25       0.3161      0.31  |         |         |         |        O|
15+30       0.3147      0.31  |         |         |         |        O|
15+35       0.3130      0.31  |         |         |         |       IO|
15+40       0.3095      0.30  |         |         |         |      I O|
15+45       0.3035      0.29  |         |         |         |     I O |
15+50       0.2962      0.28  |         |         |         |    I O  |
15+55       0.2890      0.28  |         |         |         |    IO   |
16+ 0       0.2824      0.27  |         |         |         |   IO    |
16+ 5       0.2764      0.26  |         |         |         | I O     |
16+10       0.2650      0.23  |         |         |        I|  O      |
16+15       0.2437      0.20  |         |         |    I    O         |
16+20       0.2175      0.18  |         |         | I    O  |         |
16+25       0.1915      0.15  |         |        I|   O     |         |
16+30       0.1679      0.13  |         |     I   |O        |         |
16+35       0.1471      0.12  |         |   I   O |         |         |
16+40       0.1286      0.10  |         | I   O   |         |         |
16+45       0.1120      0.09  |         |I  O     |         |         |
16+50       0.0973      0.08  |        I| O       |         |         |
16+55       0.0844      0.07  |       I O         |         |         |
17+ 0       0.0735      0.06  |       IO|         |         |         |
17+ 5       0.0679      0.06  |       O |         |         |         |
17+10       0.0657      0.06  |       O |         |         |         |
17+15       0.0649      0.06  |       O |         |         |         |
17+20       0.0646      0.06  |       O |         |         |         |
17+25       0.0644      0.06  |       O |         |         |         |
17+30       0.0644      0.06  |       O |         |         |         |
17+35       0.0644      0.06  |       O |         |         |         |
17+40       0.0643      0.06  |       O |         |         |         |
17+45       0.0643      0.06  |       O |         |         |         |
17+50       0.0643      0.06  |       O |         |         |         |
17+55       0.0643      0.06  |       O |         |         |         |
18+ 0       0.0643      0.06  |       O |         |         |         |
18+ 5       0.0643      0.06  |       O |         |         |         |
```

18+10	0.0643	0.06	O			
18+15	0.0643	0.06	O			
18+20	0.0643	0.06	O			
18+25	0.0643	0.06	O			
18+30	0.0643	0.06	O			
18+35	0.0643	0.06	O			
18+40	0.0643	0.06	O			
18+45	0.0643	0.06	O			
18+50	0.0643	0.06	O			
18+55	0.0643	0.06	O			
19+ 0	0.0643	0.06	O			
19+ 5	0.0643	0.06	O			
19+10	0.0643	0.06	O			
19+15	0.0643	0.06	O			
19+20	0.0643	0.06	O			
19+25	0.0643	0.06	O			
19+30	0.0643	0.06	O			
19+35	0.0643	0.06	O			
19+40	0.0643	0.06	O			
19+45	0.0643	0.06	O			
19+50	0.0643	0.06	O			
19+55	0.0643	0.06	O			
20+ 0	0.0643	0.06	O			
20+ 5	0.0643	0.06	O			
20+10	0.0643	0.06	O			
20+15	0.0643	0.06	O			
20+20	0.0643	0.06	O			
20+25	0.0643	0.06	O			
20+30	0.0643	0.06	O			
20+35	0.0643	0.06	O			
20+40	0.0643	0.06	O			
20+45	0.0643	0.06	O			
20+50	0.0643	0.06	O			
20+55	0.0643	0.06	O			
21+ 0	0.0643	0.06	O			
21+ 5	0.0643	0.06	O			
21+10	0.0643	0.06	O			
21+15	0.0643	0.06	O			
21+20	0.0643	0.06	O			
21+25	0.0643	0.06	O			
21+30	0.0643	0.06	O			
21+35	0.0643	0.06	O			
21+40	0.0643	0.06	O			
21+45	0.0643	0.06	O			
21+50	0.0643	0.06	O			
21+55	0.0643	0.06	O			
22+ 0	0.0643	0.06	O			
22+ 5	0.0643	0.06	O			
22+10	0.0643	0.06	O			
22+15	0.0643	0.06	O			
22+20	0.0643	0.06	O			
22+25	0.0643	0.06	O			
22+30	0.0643	0.06	O			
22+35	0.0643	0.06	O			
22+40	0.0643	0.06	O			
22+45	0.0643	0.06	O			
22+50	0.0643	0.06	O			
22+55	0.0643	0.06	O			
23+ 0	0.0643	0.06	O			
23+ 5	0.0643	0.06	O			
23+10	0.0643	0.06	O			
23+15	0.0643	0.06	O			
23+20	0.0643	0.06	O			

```
  23+25       0.0643      0.06  |       O |         |         |         |
  23+30       0.0643      0.06  |       O |         |         |         |
  23+35       0.0643      0.06  |       O |         |         |         |
  23+40       0.0643      0.06  |       O |         |         |         |
  23+45       0.0643      0.06  |       O |         |         |         |
  23+50       0.0643      0.06  |       O |         |         |         |
  23+55       0.0643      0.06  |       O |         |         |         |
  24+ 0       0.0643      0.06  |       O |         |         |         |
  24+ 5       0.0643      0.06  |       O |         |         |         |
  24+10       0.0643      0.06  |       O |         |         |         |
  24+15       0.0643      0.06  |       O |         |         |         |
  24+20       0.0623      0.00  I      O  |         |         |         |
  24+25       0.0243      0.00  I  O      |         |         |         |
  24+30       0.0095      0.00  IO        |         |         |         |
  24+35       0.0037      0.00  O         |         |         |         |
  24+40       0.0015      0.00  O         |         |         |         |
  24+45       0.0000      0.00  O         |         |         |         |
-----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   297
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.317 (CFS)
                  Total volume =       0.142 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ---------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      401.100 to Point/Station       10.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259DPOND1024.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ---------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/21/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA E (Pond E)- Q10yr1hr(ONSITE)- Unit Hydrograph Method

---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHE110.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    16
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        9.731 (CFS)
             Total volume =       0.334 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      501.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.22(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.22(Ft.)    Capacity =   0.39(CFS)
```

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 5.22(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.22(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 2.20(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.52(Ft.) Capacity = 21.93(CFS)

Total outflow at this depth = 22.32(CFS)

Total number of inflow hydrograph intervals = 16
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.098	0.393	0.097	0.099
3.220	0.261	0.393	0.260	0.262
5.220	0.652	22.322	0.575	0.729

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.4 4.87 7.30 9.73	Depth (Ft.)
0.083	0.65	0.01	0.002	O I | | | | |	0.02
0.167	1.60	0.04	0.010	O I | | | |	0.10
0.250	2.03	0.09	0.022	O I | | | |	0.22
0.333	2.23	0.14	0.036	O I| | | |	0.36
0.417	2.51	0.20	0.051	O I | | |	0.52
0.500	2.72	0.27	0.067	O I | | |	0.69
0.583	3.04	0.34	0.085	|O |I | | |	0.87
0.667	3.67	0.39	0.106	|O | I | | |	1.10
0.750	5.06	0.39	0.133	|O | I | |	1.48
0.833	9.73	0.39	0.181	|O | | | I	2.13
0.917	8.90	0.39	0.243	|O | | | I |	2.97
1.000	4.04	1.49	0.281	| O | I | | |	3.32
1.083	1.75	1.95	0.289	| IO | | | |	3.36
1.167	0.48	1.68	0.284	|I O | | | |	3.34
1.250	0.11	1.23	0.276	I O | | | |	3.30
1.333	0.02	0.85	0.269	I O | | | |	3.26
1.417	0.00	0.58	0.264	IO | | | |	3.24
1.500	0.00	0.39	0.261	IO | | | |	3.22

1.583	0.00	0.39	0.258	IO					3.18
1.667	0.00	0.39	0.256	IO					3.15
1.750	0.00	0.39	0.253	IO					3.11
1.833	0.00	0.39	0.250	IO					3.07
1.917	0.00	0.39	0.247	IO					3.04
2.000	0.00	0.39	0.245	IO					3.00
2.083	0.00	0.39	0.242	IO					2.96
2.167	0.00	0.39	0.239	IO					2.93
2.250	0.00	0.39	0.237	IO					2.89
2.333	0.00	0.39	0.234	IO					2.85
2.417	0.00	0.39	0.231	IO					2.81
2.500	0.00	0.39	0.229	IO					2.78
2.583	0.00	0.39	0.226	IO					2.74
2.667	0.00	0.39	0.223	IO					2.70
2.750	0.00	0.39	0.220	IO					2.67
2.833	0.00	0.39	0.218	IO					2.63
2.917	0.00	0.39	0.215	IO					2.59
3.000	0.00	0.39	0.212	IO					2.56
3.083	0.00	0.39	0.210	IO					2.52
3.167	0.00	0.39	0.207	IO					2.48
3.250	0.00	0.39	0.204	IO					2.45
3.333	0.00	0.39	0.201	IO					2.41
3.417	0.00	0.39	0.199	IO					2.37
3.500	0.00	0.39	0.196	IO					2.34
3.583	0.00	0.39	0.193	IO					2.30
3.667	0.00	0.39	0.191	IO					2.26
3.750	0.00	0.39	0.188	IO					2.22
3.833	0.00	0.39	0.185	IO					2.19
3.917	0.00	0.39	0.183	IO					2.15
4.000	0.00	0.39	0.180	IO					2.11
4.083	0.00	0.39	0.177	IO					2.08
4.167	0.00	0.39	0.174	IO					2.04
4.250	0.00	0.39	0.172	IO					2.00
4.333	0.00	0.39	0.169	IO					1.97
4.417	0.00	0.39	0.166	IO					1.93
4.500	0.00	0.39	0.164	IO					1.89
4.583	0.00	0.39	0.161	IO					1.86
4.667	0.00	0.39	0.158	IO					1.82
4.750	0.00	0.39	0.155	IO					1.78
4.833	0.00	0.39	0.153	IO					1.75
4.917	0.00	0.39	0.150	IO					1.71
5.000	0.00	0.39	0.147	IO					1.67
5.083	0.00	0.39	0.145	IO					1.63
5.167	0.00	0.39	0.142	IO					1.60
5.250	0.00	0.39	0.139	IO					1.56
5.333	0.00	0.39	0.136	IO					1.52
5.417	0.00	0.39	0.134	IO					1.49
5.500	0.00	0.39	0.131	IO					1.45
5.583	0.00	0.39	0.128	IO					1.41
5.667	0.00	0.39	0.126	IO					1.38
5.750	0.00	0.39	0.123	IO					1.34
5.833	0.00	0.39	0.120	IO					1.30
5.917	0.00	0.39	0.118	IO					1.27
6.000	0.00	0.39	0.115	IO					1.23
6.083	0.00	0.39	0.112	IO					1.19
6.167	0.00	0.39	0.109	IO					1.16
6.250	0.00	0.39	0.107	IO					1.12
6.333	0.00	0.39	0.104	IO					1.08
6.417	0.00	0.39	0.101	IO					1.04
6.500	0.00	0.39	0.099	IO					1.01
6.583	0.00	0.38	0.096	IO					0.98
6.667	0.00	0.37	0.093	IO					0.95
6.750	0.00	0.36	0.091	IO					0.93

6.833	0.00	0.35	0.088	IO	|	|	|	|	0.90
6.917	0.00	0.34	0.086	IO	|	|	|	|	0.88
7.000	0.00	0.34	0.084	IO	|	|	|	|	0.85
7.083	0.00	0.33	0.081	IO	|	|	|	|	0.83
7.167	0.00	0.32	0.079	IO	|	|	|	|	0.81
7.250	0.00	0.31	0.077	IO	|	|	|	|	0.78
7.333	0.00	0.30	0.075	O	|	|	|	|	0.76
7.417	0.00	0.29	0.073	O	|	|	|	|	0.74
7.500	0.00	0.28	0.071	O	|	|	|	|	0.72
7.583	0.00	0.28	0.069	O	|	|	|	|	0.70
7.667	0.00	0.27	0.067	O	|	|	|	|	0.68
7.750	0.00	0.26	0.065	O	|	|	|	|	0.66
7.833	0.00	0.25	0.063	O	|	|	|	|	0.65
7.917	0.00	0.25	0.062	O	|	|	|	|	0.63
8.000	0.00	0.24	0.060	O	|	|	|	|	0.61
8.083	0.00	0.23	0.058	O	|	|	|	|	0.60
8.167	0.00	0.23	0.057	O	|	|	|	|	0.58
8.250	0.00	0.22	0.055	O	|	|	|	|	0.56
8.333	0.00	0.22	0.054	O	|	|	|	|	0.55
8.417	0.00	0.21	0.052	O	|	|	|	|	0.53
8.500	0.00	0.20	0.051	O	|	|	|	|	0.52
8.583	0.00	0.20	0.049	O	|	|	|	|	0.50
8.667	0.00	0.19	0.048	O	|	|	|	|	0.49
8.750	0.00	0.19	0.047	O	|	|	|	|	0.48
8.833	0.00	0.18	0.045	O	|	|	|	|	0.46
8.917	0.00	0.18	0.044	O	|	|	|	|	0.45
9.000	0.00	0.17	0.043	O	|	|	|	|	0.44
9.083	0.00	0.17	0.042	O	|	|	|	|	0.43
9.167	0.00	0.16	0.041	O	|	|	|	|	0.42
9.250	0.00	0.16	0.040	O	|	|	|	|	0.40
9.333	0.00	0.15	0.039	O	|	|	|	|	0.39
9.417	0.00	0.15	0.037	O	|	|	|	|	0.38
9.500	0.00	0.15	0.036	O	|	|	|	|	0.37
9.583	0.00	0.14	0.035	O	|	|	|	|	0.36
9.667	0.00	0.14	0.035	O	|	|	|	|	0.35
9.750	0.00	0.13	0.034	O	|	|	|	|	0.34
9.833	0.00	0.13	0.033	O	|	|	|	|	0.33
9.917	0.00	0.13	0.032	O	|	|	|	|	0.32
10.000	0.00	0.12	0.031	O	|	|	|	|	0.32
10.083	0.00	0.12	0.030	O	|	|	|	|	0.31
10.167	0.00	0.12	0.029	O	|	|	|	|	0.30
10.250	0.00	0.11	0.028	O	|	|	|	|	0.29
10.333	0.00	0.11	0.028	O	|	|	|	|	0.28
10.417	0.00	0.11	0.027	O	|	|	|	|	0.27
10.500	0.00	0.11	0.026	O	|	|	|	|	0.27
10.583	0.00	0.10	0.025	O	|	|	|	|	0.26
10.667	0.00	0.10	0.025	O	|	|	|	|	0.25

Remaining water in basin = 0.02 (Ac.Ft)

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****************************HYDROGRAPH DATA****************************
              Number of intervals =   128
              Time interval =    5.0 (Min.)
              Maximum/Peak flow rate =        1.948 (CFS)
              Total volume =       0.310 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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Process from Point/Station      502.100 to Point/Station       10.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =   1281.00 (Ft.)
Elevation difference =    9.20 (Ft.)
Slope of channel =  0.007182 (Vert/Horiz)
Channel type - Pipe


Pipe length  =  1281.00(Ft.)   Elevation difference =   9.20(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.601(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.601(CFS)
Normal flow depth in pipe =    4.12(In.)
Flow top width inside pipe =    8.97(In.)
Critical Depth =    0.35(Ft.)
Pipe flow velocity =      3.05(Ft/s)
Travel time through pipe =    6.99 min.


Pipe length  =  1281.00(Ft.)   Elevation difference =   9.20(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     1.948(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.948(CFS)
Normal flow depth in pipe =    7.01(In.)
Flow top width inside pipe =   11.83(In.)
Critical Depth =    0.59(Ft.)
Pipe flow velocity =      4.09(Ft/s)
Travel time through pipe =    5.23 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7062   Travel time =   5.23 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.2367
       dt(routing time-step) =   3.69 (min.),   c* =   0.7801

Output hydrograph delayed by 0  unit time increments


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                  P R I N T  O F  S T O R M
              R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

--------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.5       1.0       1.5       1.9
----------------------------------------------------------------------
  0+ 5       0.0018      0.01  O         |         |         |         |
  0+10       0.0135      0.04  O         |         |         |         |
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0+15       0.0435      0.09  OI        |         |         |         |
0+20       0.0893      0.14  |OI       |         |         |         |
0+25       0.1438      0.20  | O I     |         |         |         |
0+30       0.2041      0.27  |   OI    |         |         |         |
0+35       0.2697      0.34  |    OI   |         |         |         |
0+40       0.3358      0.39  |     O I |         |         |         |
0+45       0.3805      0.39  |      OI |         |         |         |
0+50       0.3903      0.39  |       O |         |         |         |
0+55       0.3925      0.39  |       O |         |         |         |
1+ 0       0.6179      1.49  |         | O       |         I         |
1+ 5       1.3941      1.95  |         |         |       O |         I
1+10       1.7712      1.68  |         |         |         |   I O   |
1+15       1.6080      1.23  |         |         |    I    |  O      |
1+20       1.2376      0.85  |         |      I  |    O    |         |
1+25       0.8833      0.58  |         |I      O |         |         |
1+30       0.6096      0.39  |       I | O       |         |         |
1+35       0.4409      0.39  |       IO|         |         |         |
1+40       0.4036      0.39  |       O |         |         |         |
1+45       0.3954      0.39  |       O |         |         |         |
1+50       0.3936      0.39  |       O |         |         |         |
1+55       0.3932      0.39  |       O |         |         |         |
2+ 0       0.3931      0.39  |       O |         |         |         |
2+ 5       0.3931      0.39  |       O |         |         |         |
2+10       0.3931      0.39  |       O |         |         |         |
2+15       0.3931      0.39  |       O |         |         |         |
2+20       0.3931      0.39  |       O |         |         |         |
2+25       0.3931      0.39  |       O |         |         |         |
2+30       0.3931      0.39  |       O |         |         |         |
2+35       0.3931      0.39  |       O |         |         |         |
2+40       0.3931      0.39  |       O |         |         |         |
2+45       0.3931      0.39  |       O |         |         |         |
2+50       0.3931      0.39  |       O |         |         |         |
2+55       0.3931      0.39  |       O |         |         |         |
3+ 0       0.3931      0.39  |       O |         |         |         |
3+ 5       0.3931      0.39  |       O |         |         |         |
3+10       0.3931      0.39  |       O |         |         |         |
3+15       0.3931      0.39  |       O |         |         |         |
3+20       0.3931      0.39  |       O |         |         |         |
3+25       0.3931      0.39  |       O |         |         |         |
3+30       0.3931      0.39  |       O |         |         |         |
3+35       0.3931      0.39  |       O |         |         |         |
3+40       0.3931      0.39  |       O |         |         |         |
3+45       0.3931      0.39  |       O |         |         |         |
3+50       0.3931      0.39  |       O |         |         |         |
3+55       0.3931      0.39  |       O |         |         |         |
4+ 0       0.3931      0.39  |       O |         |         |         |
4+ 5       0.3931      0.39  |       O |         |         |         |
4+10       0.3931      0.39  |       O |         |         |         |
4+15       0.3931      0.39  |       O |         |         |         |
4+20       0.3931      0.39  |       O |         |         |         |
4+25       0.3931      0.39  |       O |         |         |         |
4+30       0.3931      0.39  |       O |         |         |         |
4+35       0.3931      0.39  |       O |         |         |         |
4+40       0.3931      0.39  |       O |         |         |         |
4+45       0.3931      0.39  |       O |         |         |         |
4+50       0.3931      0.39  |       O |         |         |         |
4+55       0.3931      0.39  |       O |         |         |         |
5+ 0       0.3931      0.39  |       O |         |         |         |
5+ 5       0.3931      0.39  |       O |         |         |         |
5+10       0.3931      0.39  |       O |         |         |         |
5+15       0.3931      0.39  |       O |         |         |         |
5+20       0.3931      0.39  |       O |         |         |         |
5+25       0.3931      0.39  |       O |         |         |         |
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 5+30       0.3931      0.39  |        O |          |          |          |
 5+35       0.3931      0.39  |        O |          |          |          |
 5+40       0.3931      0.39  |        O |          |          |          |
 5+45       0.3931      0.39  |        O |          |          |          |
 5+50       0.3931      0.39  |        O |          |          |          |
 5+55       0.3931      0.39  |        O |          |          |          |
 6+ 0       0.3931      0.39  |        O |          |          |          |
 6+ 5       0.3931      0.39  |        O |          |          |          |
 6+10       0.3931      0.39  |        O |          |          |          |
 6+15       0.3931      0.39  |        O |          |          |          |
 6+20       0.3931      0.39  |        O |          |          |          |
 6+25       0.3931      0.39  |        O |          |          |          |
 6+30       0.3931      0.39  |        O |          |          |          |
 6+35       0.3913      0.38  |       IO |          |          |          |
 6+40       0.3840      0.37  |       O  |          |          |          |
 6+45       0.3743      0.36  |       O  |          |          |          |
 6+50       0.3642      0.35  |       O  |          |          |          |
 6+55       0.3543      0.34  |       O  |          |          |          |
 7+ 0       0.3447      0.34  |      IO  |          |          |          |
 7+ 5       0.3353      0.33  |      O   |          |          |          |
 7+10       0.3262      0.32  |      O   |          |          |          |
 7+15       0.3173      0.31  |      O   |          |          |          |
 7+20       0.3086      0.30  |      O   |          |          |          |
 7+25       0.3002      0.29  |     IO   |          |          |          |
 7+30       0.2920      0.28  |     O    |          |          |          |
 7+35       0.2841      0.28  |     O    |          |          |          |
 7+40       0.2763      0.27  |     O    |          |          |          |
 7+45       0.2688      0.26  |     O    |          |          |          |
 7+50       0.2615      0.25  |     O    |          |          |          |
 7+55       0.2544      0.25  |     O    |          |          |          |
 8+ 0       0.2474      0.24  |    IO    |          |          |          |
 8+ 5       0.2407      0.23  |    O     |          |          |          |
 8+10       0.2341      0.23  |    O     |          |          |          |
 8+15       0.2277      0.22  |    O     |          |          |          |
 8+20       0.2215      0.22  |    O     |          |          |          |
 8+25       0.2155      0.21  |    O     |          |          |          |
 8+30       0.2096      0.20  |    O     |          |          |          |
 8+35       0.2039      0.20  |    O     |          |          |          |
 8+40       0.1984      0.19  |   IO     |          |          |          |
 8+45       0.1930      0.19  |   O      |          |          |          |
 8+50       0.1877      0.18  |   O      |          |          |          |
 8+55       0.1826      0.18  |   O      |          |          |          |
 9+ 0       0.1776      0.17  |   O      |          |          |          |
 9+ 5       0.1728      0.17  |   O      |          |          |          |
 9+10       0.1681      0.16  |   O      |          |          |          |
 9+15       0.1635      0.16  |   O      |          |          |          |
 9+20       0.1590      0.15  |   O      |          |          |          |
 9+25       0.1547      0.15  |   O      |          |          |          |
 9+30       0.1505      0.15  |   O      |          |          |          |
 9+35       0.1464      0.14  |  IO      |          |          |          |
 9+40       0.1424      0.14  | O        |          |          |          |
 9+45       0.1385      0.13  | O        |          |          |          |
 9+50       0.1347      0.13  | O        |          |          |          |
 9+55       0.1311      0.13  | O        |          |          |          |
10+ 0       0.1275      0.12  | O        |          |          |          |
10+ 5       0.1240      0.12  | O        |          |          |          |
10+10       0.1206      0.12  | O        |          |          |          |
10+15       0.1174      0.11  | O        |          |          |          |
10+20       0.1142      0.11  | O        |          |          |          |
10+25       0.1111      0.11  | O        |          |          |          |
10+30       0.1080      0.11  | O        |          |          |          |
10+35       0.1051      0.10  | O        |          |          |          |
10+40       0.1022      0.10  | O        |          |          |          |
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   10+45       0.0797      0.00  IO        |         |         |         |
   10+50       0.0175      0.00  O         |         |         |         |
   10+55       0.0039      0.00  O         |         |         |         |
   11+ 0       0.0000      0.00  O         |         |         |         |
-------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   132
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        1.771 (CFS)
                   Total volume =       0.310 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **************************************************************************

      ---------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      502.000 to Point/Station      602.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259EPOND101.rte
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =     0
                   Time interval =    0.0 (Min.)
                   Maximum/Peak flow rate =        0.000 (CFS)
                   Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **************************************************************************

      ---------------------------------------------------------------------
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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/21/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA E (Pond E)- Q10yr3hr(ONSITE)- Unit Hydrograph Method

---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHE310.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    40
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        5.709 (CFS)
             Total volume =       0.495 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      501.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.22(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.22(Ft.)    Capacity =   0.39(CFS)
```

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 5.22(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.22(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 2.20(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.52(Ft.) Capacity = 21.93(CFS)

Total outflow at this depth = 22.32(CFS)

Total number of inflow hydrograph intervals = 40
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.098	0.393	0.097	0.099
3.220	0.261	0.393	0.260	0.262
5.220	0.652	22.322	0.575	0.729

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.4 2.85 4.28 5.71	Depth (Ft.)
0.083	0.35	0.00	0.001	OI | | | |	0.01
0.167	0.71	0.02	0.005	O I | | | |	0.05
0.250	0.72	0.04	0.009	O I | | | |	0.10
0.333	0.81	0.06	0.014	O I | | | |	0.15
0.417	0.95	0.08	0.020	O I | | | |	0.20
0.500	1.07	0.11	0.026	O I | | | |	0.27
0.583	1.08	0.13	0.033	O I | | | |	0.34
0.667	1.11	0.16	0.039	O I | | | |	0.40
0.750	1.20	0.19	0.046	|O I | | | |	0.47
0.833	1.11	0.21	0.053	|O I | | | |	0.54
0.917	1.05	0.24	0.059	|O I | | | |	0.60
1.000	1.13	0.26	0.065	|O I | | | |	0.66
1.083	1.33	0.29	0.071	|O I| | | |	0.73
1.167	1.49	0.32	0.079	|O I | | |	0.80
1.250	1.52	0.35	0.087	|O I | | |	0.89
1.333	1.47	0.38	0.095	| O I | | |	0.97
1.417	1.60	0.39	0.103	| O I | | |	1.06
1.500	1.83	0.39	0.112	| O | I | | |	1.19

1.583	1.80	0.39	0.121	O	I				1.32
1.667	1.82	0.39	0.131	O	I				1.45
1.750	2.11	0.39	0.142	O	I				1.60
1.833	2.27	0.39	0.154	O	I				1.77
1.917	2.18	0.39	0.167	O	I				1.94
2.000	2.15	0.39	0.179	O	I				2.11
2.083	2.20	0.39	0.191	O	I				2.27
2.167	2.61	0.39	0.205	O	I				2.46
2.250	3.26	0.39	0.223	O		I			2.70
2.333	3.12	0.39	0.242	O		I			2.96
2.417	3.80	0.50	0.263	O			I		3.23
2.500	5.03	1.76	0.285		O			I	3.35
2.583	5.71	2.93	0.306			O			I 3.45
2.667	5.36	3.77	0.321				O	I	3.53
2.750	3.37	3.97	0.325			I	O		3.55
2.833	1.82	3.52	0.317		I		O		3.51
2.917	1.41	2.90	0.306		I	O			3.45
3.000	0.86	2.33	0.296	I		O			3.40
3.083	0.29	1.76	0.285	I	O				3.35
3.167	0.08	1.25	0.276	I	O				3.30
3.250	0.02	0.87	0.269	I	O				3.26
3.333	0.00	0.59	0.265	I	O				3.24
3.417	0.00	0.40	0.261	I O					3.22
3.500	0.00	0.39	0.258	I O					3.18
3.583	0.00	0.39	0.256	I O					3.15
3.667	0.00	0.39	0.253	I O					3.11
3.750	0.00	0.39	0.250	I O					3.07
3.833	0.00	0.39	0.248	I O					3.04
3.917	0.00	0.39	0.245	I O					3.00
4.000	0.00	0.39	0.242	I O					2.96
4.083	0.00	0.39	0.239	I O					2.93
4.167	0.00	0.39	0.237	I O					2.89
4.250	0.00	0.39	0.234	I O					2.85
4.333	0.00	0.39	0.231	I O					2.82
4.417	0.00	0.39	0.229	I O					2.78
4.500	0.00	0.39	0.226	I O					2.74
4.583	0.00	0.39	0.223	I O					2.71
4.667	0.00	0.39	0.220	I O					2.67
4.750	0.00	0.39	0.218	I O					2.63
4.833	0.00	0.39	0.215	I O					2.59
4.917	0.00	0.39	0.212	I O					2.56
5.000	0.00	0.39	0.210	I O					2.52
5.083	0.00	0.39	0.207	I O					2.48
5.167	0.00	0.39	0.204	I O					2.45
5.250	0.00	0.39	0.202	I O					2.41
5.333	0.00	0.39	0.199	I O					2.37
5.417	0.00	0.39	0.196	I O					2.34
5.500	0.00	0.39	0.193	I O					2.30
5.583	0.00	0.39	0.191	I O					2.26
5.667	0.00	0.39	0.188	I O					2.23
5.750	0.00	0.39	0.185	I O					2.19
5.833	0.00	0.39	0.183	I O					2.15
5.917	0.00	0.39	0.180	I O					2.12
6.000	0.00	0.39	0.177	I O					2.08
6.083	0.00	0.39	0.174	I O					2.04
6.167	0.00	0.39	0.172	I O					2.00
6.250	0.00	0.39	0.169	I O					1.97
6.333	0.00	0.39	0.166	I O					1.93
6.417	0.00	0.39	0.164	I O					1.89
6.500	0.00	0.39	0.161	I O					1.86
6.583	0.00	0.39	0.158	I O					1.82
6.667	0.00	0.39	0.156	I O					1.78
6.750	0.00	0.39	0.153	I O					1.75

6.833	0.00	0.39	0.150	I O	|	|	|	|	1.71
6.917	0.00	0.39	0.147	I O	|	|	|	|	1.67
7.000	0.00	0.39	0.145	I O	|	|	|	|	1.64
7.083	0.00	0.39	0.142	I O	|	|	|	|	1.60
7.167	0.00	0.39	0.139	I O	|	|	|	|	1.56
7.250	0.00	0.39	0.137	I O	|	|	|	|	1.53
7.333	0.00	0.39	0.134	I O	|	|	|	|	1.49
7.417	0.00	0.39	0.131	I O	|	|	|	|	1.45
7.500	0.00	0.39	0.128	I O	|	|	|	|	1.41
7.583	0.00	0.39	0.126	I O	|	|	|	|	1.38
7.667	0.00	0.39	0.123	I O	|	|	|	|	1.34
7.750	0.00	0.39	0.120	I O	|	|	|	|	1.30
7.833	0.00	0.39	0.118	I O	|	|	|	|	1.27
7.917	0.00	0.39	0.115	I O	|	|	|	|	1.23
8.000	0.00	0.39	0.112	I O	|	|	|	|	1.19
8.083	0.00	0.39	0.109	I O	|	|	|	|	1.16
8.167	0.00	0.39	0.107	I O	|	|	|	|	1.12
8.250	0.00	0.39	0.104	I O	|	|	|	|	1.08
8.333	0.00	0.39	0.101	I O	|	|	|	|	1.05
8.417	0.00	0.39	0.099	I O	|	|	|	|	1.01
8.500	0.00	0.38	0.096	I O	|	|	|	|	0.98
8.583	0.00	0.37	0.093	I O	|	|	|	|	0.95
8.667	0.00	0.36	0.091	I O	|	|	|	|	0.93
8.750	0.00	0.35	0.088	IO	|	|	|	|	0.90
8.833	0.00	0.34	0.086	IO	|	|	|	|	0.88
8.917	0.00	0.34	0.084	IO	|	|	|	|	0.85
9.000	0.00	0.33	0.081	IO	|	|	|	|	0.83
9.083	0.00	0.32	0.079	IO	|	|	|	|	0.81
9.167	0.00	0.31	0.077	IO	|	|	|	|	0.79
9.250	0.00	0.30	0.075	IO	|	|	|	|	0.76
9.333	0.00	0.29	0.073	IO	|	|	|	|	0.74
9.417	0.00	0.28	0.071	IO	|	|	|	|	0.72
9.500	0.00	0.28	0.069	IO	|	|	|	|	0.70
9.583	0.00	0.27	0.067	IO	|	|	|	|	0.68
9.667	0.00	0.26	0.065	IO	|	|	|	|	0.67
9.750	0.00	0.25	0.063	IO	|	|	|	|	0.65
9.833	0.00	0.25	0.062	IO	|	|	|	|	0.63
9.917	0.00	0.24	0.060	IO	|	|	|	|	0.61
10.000	0.00	0.23	0.058	IO	|	|	|	|	0.60
10.083	0.00	0.23	0.057	IO	|	|	|	|	0.58
10.167	0.00	0.22	0.055	IO	|	|	|	|	0.56
10.250	0.00	0.22	0.054	IO	|	|	|	|	0.55
10.333	0.00	0.21	0.052	IO	|	|	|	|	0.53
10.417	0.00	0.20	0.051	IO	|	|	|	|	0.52
10.500	0.00	0.20	0.049	IO	|	|	|	|	0.50
10.583	0.00	0.19	0.048	IO	|	|	|	|	0.49
10.667	0.00	0.19	0.047	IO	|	|	|	|	0.48
10.750	0.00	0.18	0.046	IO	|	|	|	|	0.46
10.833	0.00	0.18	0.044	O	|	|	|	|	0.45
10.917	0.00	0.17	0.043	O	|	|	|	|	0.44
11.000	0.00	0.17	0.042	O	|	|	|	|	0.43
11.083	0.00	0.16	0.041	O	|	|	|	|	0.42
11.167	0.00	0.16	0.040	O	|	|	|	|	0.40
11.250	0.00	0.15	0.039	O	|	|	|	|	0.39
11.333	0.00	0.15	0.038	O	|	|	|	|	0.38
11.417	0.00	0.15	0.037	O	|	|	|	|	0.37
11.500	0.00	0.14	0.036	O	|	|	|	|	0.36
11.583	0.00	0.14	0.035	O	|	|	|	|	0.35
11.667	0.00	0.13	0.034	O	|	|	|	|	0.34
11.750	0.00	0.13	0.033	O	|	|	|	|	0.33
11.833	0.00	0.13	0.032	O	|	|	|	|	0.32
11.917	0.00	0.12	0.031	O	|	|	|	|	0.32
12.000	0.00	0.12	0.030	O	|	|	|	|	0.31

```
12.083    0.00    0.12      0.029  O       |       |       |       |     0.30
12.167    0.00    0.11      0.028  O       |       |       |       |     0.29
12.250    0.00    0.11      0.028  O       |       |       |       |     0.28
12.333    0.00    0.11      0.027  O       |       |       |       |     0.27
12.417    0.00    0.11      0.026  O       |       |       |       |     0.27
12.500    0.00    0.10      0.025  O       |       |       |       |     0.26
12.583    0.00    0.10      0.025  O       |       |       |       |     0.25


      Remaining water in basin =    0.02 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   151
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        3.966 (CFS)
                   Total volume =       0.470 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      502.100 to Point/Station       10.000
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =   1280.00 (Ft.)
      Elevation difference =    9.20 (Ft.)
      Slope of channel =  0.007187 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =  1280.00(Ft.)   Elevation difference =   9.20(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     0.812(CFS)
      Nearest computed pipe diameter  =      9.00(In.)
      Calculated individual pipe flow  =     0.812(CFS)
      Normal flow depth in pipe =    4.91(In.)
      Flow top width inside pipe =    8.96(In.)
      Critical Depth =    0.41(Ft.)
      Pipe flow velocity =      3.29(Ft/s)
      Travel time through pipe =    6.49 min.


      Pipe length  =  1280.00(Ft.)   Elevation difference =   9.20(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     3.966(CFS)
      Nearest computed pipe diameter  =     15.00(In.)
      Calculated individual pipe flow  =     3.966(CFS)
      Normal flow depth in pipe =    9.46(In.)
      Flow top width inside pipe =   14.48(In.)
      Critical Depth =    0.81(Ft.)
      Pipe flow velocity =      4.86(Ft/s)
      Travel time through pipe =    4.39 min.
```

```
********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7409   Travel time =   4.39 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.3587
       dt(routing time-step) =   3.25 (min.),   c* =   0.8404

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T  O F  S T O R M
                 R u n o f f     H y d r o g r a p h
-------------------------------------------------------------------
             Hydrograph in   5   Minute intervals (CFS)

-------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.0       2.0       3.0       4.0
-----------------------------------------------------------------------
  0+ 5       0.0014      0.00  O         |         |         |         |
  0+10       0.0084      0.02  O         |         |         |         |
  0+15       0.0230      0.04  O         |         |         |         |
  0+20       0.0415      0.06  O         |         |         |         |
  0+25       0.0619      0.08  O         |         |         |         |
  0+30       0.0848      0.11  OI        |         |         |         |
  0+35       0.1101      0.13  |O        |         |         |         |
  0+40       0.1363      0.16  |O        |         |         |         |
  0+45       0.1628      0.19  |O        |         |         |         |
  0+50       0.1896      0.21  |OI       |         |         |         |
  0+55       0.2152      0.24  | O       |         |         |         |
  1+ 0       0.2391      0.26  | O       |         |         |         |
  1+ 5       0.2634      0.29  | O       |         |         |         |
  1+10       0.2907      0.32  | OI      |         |         |         |
  1+15       0.3213      0.35  |  O      |         |         |         |
  1+20       0.3531      0.38  |  O      |         |         |         |
  1+25       0.3792      0.39  |  O      |         |         |         |
  1+30       0.3909      0.39  |  O      |         |         |         |
  1+35       0.3927      0.39  |  O      |         |         |         |
  1+40       0.3930      0.39  |  O      |         |         |         |
  1+45       0.3931      0.39  |  O      |         |         |         |
  1+50       0.3931      0.39  |  O      |         |         |         |
  1+55       0.3931      0.39  |  O      |         |         |         |
  2+ 0       0.3931      0.39  |  O      |         |         |         |
  2+ 5       0.3931      0.39  |  O      |         |         |         |
  2+10       0.3931      0.39  |  O      |         |         |         |
  2+15       0.3931      0.39  |  O      |         |         |         |
  2+20       0.3931      0.39  |  O      |         |         |         |
  2+25       0.4231      0.50  |   O     |         |         |         |
  2+30       0.8567      1.76  |       O |      I  |         |         |
  2+35       1.9625      2.93  |         |        O|        I|         |
  2+40       3.0249      3.77  |         |         |         O       I |
  2+45       3.7113      3.97  |         |         |         |      O  I
  2+50       3.7946      3.52  |         |         |         |    I  O |
  2+55       3.3836      2.90  |         |         |        I|   O     |
  3+ 0       2.8129      2.33  |         |         |  I    O |         |
  3+ 5       2.2424      1.76  |         |      I  | O       |         |
  3+10       1.6906      1.25  |         | I    O  |         |         |
  3+15       1.2092      0.87  |       I | O       |         |         |
  3+20       0.8391      0.59  |    I  O |         |         |         |
  3+25       0.5735      0.40  |   IO    |         |         |         |
  3+30       0.4253      0.39  |  IO     |         |         |         |
```

3+35	0.3982	0.39	IO				
3+40	0.3939	0.39	O				
3+45	0.3932	0.39	O				
3+50	0.3931	0.39	O				
3+55	0.3931	0.39	O				
4+ 0	0.3931	0.39	O				
4+ 5	0.3931	0.39	O				
4+10	0.3931	0.39	O				
4+15	0.3931	0.39	O				
4+20	0.3931	0.39	O				
4+25	0.3931	0.39	O				
4+30	0.3931	0.39	O				
4+35	0.3931	0.39	O				
4+40	0.3931	0.39	O				
4+45	0.3931	0.39	O				
4+50	0.3931	0.39	O				
4+55	0.3931	0.39	O				
5+ 0	0.3931	0.39	O				
5+ 5	0.3931	0.39	O				
5+10	0.3931	0.39	O				
5+15	0.3931	0.39	O				
5+20	0.3931	0.39	O				
5+25	0.3931	0.39	O				
5+30	0.3931	0.39	O				
5+35	0.3931	0.39	O				
5+40	0.3931	0.39	O				
5+45	0.3931	0.39	O				
5+50	0.3931	0.39	O				
5+55	0.3931	0.39	O				
6+ 0	0.3931	0.39	O				
6+ 5	0.3931	0.39	O				
6+10	0.3931	0.39	O				
6+15	0.3931	0.39	O				
6+20	0.3931	0.39	O				
6+25	0.3931	0.39	O				
6+30	0.3931	0.39	O				
6+35	0.3931	0.39	O				
6+40	0.3931	0.39	O				
6+45	0.3931	0.39	O				
6+50	0.3931	0.39	O				
6+55	0.3931	0.39	O				
7+ 0	0.3931	0.39	O				
7+ 5	0.3931	0.39	O				
7+10	0.3931	0.39	O				
7+15	0.3931	0.39	O				
7+20	0.3931	0.39	O				
7+25	0.3931	0.39	O				
7+30	0.3931	0.39	O				
7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				
8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3907	0.38	O				
8+35	0.3828	0.37	O				
8+40	0.3728	0.36	O				
8+45	0.3627	0.35	O				

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   8+50       0.3529      0.34  |  O      |         |         |         |
   8+55       0.3433      0.34  |  O      |         |         |         |
   9+ 0       0.3339      0.33  |  O      |         |         |         |
   9+ 5       0.3248      0.32  |  O      |         |         |         |
   9+10       0.3160      0.31  |  O      |         |         |         |
   9+15       0.3073      0.30  |  O      |         |         |         |
   9+20       0.2990      0.29  | IO      |         |         |         |
   9+25       0.2908      0.28  | O       |         |         |         |
   9+30       0.2829      0.28  | O       |         |         |         |
   9+35       0.2752      0.27  | O       |         |         |         |
   9+40       0.2677      0.26  | O       |         |         |         |
   9+45       0.2604      0.25  | O       |         |         |         |
   9+50       0.2533      0.25  | O       |         |         |         |
   9+55       0.2464      0.24  | O       |         |         |         |
  10+ 0       0.2397      0.23  | O       |         |         |         |
  10+ 5       0.2332      0.23  | O       |         |         |         |
  10+10       0.2268      0.22  | O       |         |         |         |
  10+15       0.2206      0.22  | O       |         |         |         |
  10+20       0.2146      0.21  | O       |         |         |         |
  10+25       0.2088      0.20  | O       |         |         |         |
  10+30       0.2031      0.20  | O       |         |         |         |
  10+35       0.1975      0.19  |O        |         |         |         |
  10+40       0.1922      0.19  |O        |         |         |         |
  10+45       0.1869      0.18  |O        |         |         |         |
  10+50       0.1818      0.18  |O        |         |         |         |
  10+55       0.1769      0.17  |O        |         |         |         |
  11+ 0       0.1721      0.17  |O        |         |         |         |
  11+ 5       0.1674      0.16  |O        |         |         |         |
  11+10       0.1628      0.16  |O        |         |         |         |
  11+15       0.1584      0.15  |O        |         |         |         |
  11+20       0.1541      0.15  |O        |         |         |         |
  11+25       0.1499      0.15  |O        |         |         |         |
  11+30       0.1458      0.14  |O        |         |         |         |
  11+35       0.1418      0.14  |O        |         |         |         |
  11+40       0.1379      0.13  |O        |         |         |         |
  11+45       0.1342      0.13  |O        |         |         |         |
  11+50       0.1305      0.13  |O        |         |         |         |
  11+55       0.1270      0.12  |O        |         |         |         |
  12+ 0       0.1235      0.12  |O        |         |         |         |
  12+ 5       0.1201      0.12  |O        |         |         |         |
  12+10       0.1169      0.11  |O        |         |         |         |
  12+15       0.1137      0.11  |O        |         |         |         |
  12+20       0.1106      0.11  |O        |         |         |         |
  12+25       0.1076      0.11  |O        |         |         |         |
  12+30       0.1046      0.10  |O        |         |         |         |
  12+35       0.1018      0.10  |O        |         |         |         |
  12+40       0.0706      0.00  O         |         |         |         |
  12+45       0.0113      0.00  O         |         |         |         |
  12+50       0.0018      0.00  O         |         |         |         |
  12+55       0.0000      0.00  O         |         |         |         |
-------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =   155
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        3.795 (CFS)
                 Total volume =       0.470 (Ac.Ft)
           Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      602.000
**** STORE OR DELETE CURRENT HYDROGRAPH ****
______________________________________________________________________
Current stream hydrograph saved in file 27259EPOND103.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =     0
             Time interval =    0.0 (Min.)
             Maximum/Peak flow rate =        0.000 (CFS)
             Total volume =       0.000 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/21/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA E (Pond E)- Q10yr6hr(ONSITE)- Unit Hydrograph Method

---------------------------------------------------------------------


Program License Serial Number 4066

---------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHE610.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =    76
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        5.642 (CFS)
             Total volume =       0.705 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      501.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.22(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.22(Ft.)    Capacity =   0.39(CFS)
```

Total outflow at this depth = 0.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 5.22(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.22(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 2.20(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.52(Ft.) Capacity = 21.93(CFS)

Total outflow at this depth = 22.32(CFS)

Total number of inflow hydrograph intervals = 76
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.098	0.393	0.097	0.099
3.220	0.261	0.393	0.260	0.262
5.220	0.652	22.322	0.575	0.729

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.4 2.82 4.23 5.64	Depth (Ft.)
0.083	0.16	0.00	0.001	O | | | |	0.01
0.167	0.38	0.01	0.002	O I | | | |	0.02
0.250	0.46	0.02	0.005	O I | | | |	0.05
0.333	0.49	0.03	0.008	O I | | | |	0.08
0.417	0.50	0.05	0.011	O I | | | |	0.12
0.500	0.55	0.06	0.015	O I | | | |	0.15
0.583	0.60	0.07	0.018	O I | | | |	0.19
0.667	0.61	0.09	0.022	O I | | | |	0.22
0.750	0.62	0.10	0.025	O I | | | |	0.26
0.833	0.62	0.12	0.029	O I | | | |	0.29
0.917	0.62	0.13	0.032	O I | | | |	0.33
1.000	0.67	0.14	0.036	O I | | | |	0.36
1.083	0.72	0.16	0.039	O I | | | |	0.40
1.167	0.73	0.17	0.043	O I | | | |	0.44
1.250	0.73	0.19	0.047	|O I | | | |	0.48
1.333	0.73	0.20	0.051	|O I | | | |	0.52
1.417	0.73	0.22	0.054	|O I | | | |	0.55
1.500	0.73	0.23	0.058	|O I | | | |	0.59

1.583	0.73	0.25	0.061	|O I |	|	|	|	0.63
1.667	0.73	0.26	0.065	|O I |	|	|	|	0.66
1.750	0.73	0.27	0.068	|O I |	|	|	|	0.69
1.833	0.73	0.28	0.071	|O I |	|	|	|	0.72
1.917	0.73	0.30	0.074	|O I |	|	|	|	0.75
2.000	0.78	0.31	0.077	|O I |	|	|	|	0.79
2.083	0.78	0.32	0.080	|O I |	|	|	|	0.82
2.167	0.79	0.33	0.084	|O I |	|	|	|	0.85
2.250	0.84	0.35	0.087	|O I |	|	|	|	0.89
2.333	0.85	0.36	0.090	| O I |	|	|	|	0.92
2.417	0.85	0.37	0.093	| O I |	|	|	|	0.95
2.500	0.85	0.39	0.097	| O I |	|	|	|	0.99
2.583	0.85	0.39	0.100	| O I |	|	|	|	1.03
2.667	0.85	0.39	0.103	| O I |	|	|	|	1.07
2.750	0.90	0.39	0.106	| O I |	|	|	|	1.11
2.833	0.95	0.39	0.110	| O I |	|	|	|	1.16
2.917	0.96	0.39	0.114	| O I |	|	|	|	1.22
3.000	0.97	0.39	0.118	| O I |	|	|	|	1.27
3.083	0.97	0.39	0.122	| O I |	|	|	|	1.32
3.167	1.02	0.39	0.126	| O I |	|	|	|	1.38
3.250	1.07	0.39	0.130	| O I |	|	|	|	1.44
3.333	1.08	0.39	0.135	| O I |	|	|	|	1.50
3.417	1.13	0.39	0.140	| O I |	|	|	|	1.57
3.500	1.24	0.39	0.145	| O I|	|	|	|	1.65
3.583	1.35	0.39	0.152	| O I|	|	|	|	1.73
3.667	1.41	0.39	0.158	| O I |	|	|	|	1.82
3.750	1.48	0.39	0.166	| O I |	|	|	|	1.92
3.833	1.54	0.39	0.173	| O I |	|	|	|	2.03
3.917	1.60	0.39	0.181	| O |I |	|	|	|	2.14
4.000	1.65	0.39	0.190	| O |I |	|	|	|	2.25
4.083	1.71	0.39	0.199	| O |I |	|	|	|	2.37
4.167	1.82	0.39	0.208	| O | I |	|	|	|	2.50
4.250	1.93	0.39	0.218	| O | I |	|	|	|	2.64
4.333	2.05	0.39	0.229	| O | I |	|	|	|	2.79
4.417	2.16	0.39	0.241	| O | I |	|	|	|	2.95
4.500	2.23	0.39	0.254	| O | I |	|	|	|	3.12
4.583	2.30	0.65	0.266	| O | I |	|	|	|	3.24
4.667	2.40	1.20	0.275	| O | I |	|	|	|	3.29
4.750	2.52	1.61	0.283	| |O I |	|	|	|	3.33
4.833	2.58	1.91	0.288	| | O I |	|	|	|	3.36
4.917	2.65	2.14	0.292	| | O I|	|	|	|	3.38
5.000	2.76	2.32	0.295	| | O I|	|	|	|	3.40
5.083	3.07	2.51	0.299	| | O |I |	|	|	|	3.41
5.167	3.59	2.78	0.303	| | O| I |	|	|	|	3.44
5.250	4.05	3.11	0.310	| | |O I |	|	|	|	3.47
5.333	4.43	3.48	0.316	| | | O |I |	|	|	|	3.50
5.417	4.89	3.86	0.323	| | | O | I |	|	|	|	3.54
5.500	5.64	4.31	0.331	| | | O I|	|	|	|	3.58
5.583	4.34	4.53	0.335	| | | IO |	|	|	|	3.60
5.667	2.07	4.10	0.327	| | I | O|	|	|	|	3.56
5.750	1.06	3.28	0.312	| I | | O |	|	|	|	3.48
5.833	0.61	2.49	0.298	| I | | O |	|	|	|	3.41
5.917	0.33	1.83	0.287	|I | O |	|	|	|	3.35
6.000	0.14	1.32	0.277	I O|	|	|	|	3.30
6.083	0.05	0.92	0.270	I O |	|	|	|	3.27
6.167	0.01	0.63	0.265	I O |	|	|	|	3.24
6.250	0.00	0.43	0.262	I O |	|	|	|	3.22
6.333	0.00	0.39	0.259	I O |	|	|	|	3.19
6.417	0.00	0.39	0.256	I O |	|	|	|	3.15
6.500	0.00	0.39	0.253	I O |	|	|	|	3.12
6.583	0.00	0.39	0.251	I O |	|	|	|	3.08
6.667	0.00	0.39	0.248	I O |	|	|	|	3.04
6.750	0.00	0.39	0.245	I O |	|	|	|	3.01

6.833	0.00	0.39	0.243	I O	|	|	|	|	2.97
6.917	0.00	0.39	0.240	I O	|	|	|	|	2.93
7.000	0.00	0.39	0.237	I O	|	|	|	|	2.90
7.083	0.00	0.39	0.234	I O	|	|	|	|	2.86
7.167	0.00	0.39	0.232	I O	|	|	|	|	2.82
7.250	0.00	0.39	0.229	I O	|	|	|	|	2.79
7.333	0.00	0.39	0.226	I O	|	|	|	|	2.75
7.417	0.00	0.39	0.224	I O	|	|	|	|	2.71
7.500	0.00	0.39	0.221	I O	|	|	|	|	2.67
7.583	0.00	0.39	0.218	I O	|	|	|	|	2.64
7.667	0.00	0.39	0.216	I O	|	|	|	|	2.60
7.750	0.00	0.39	0.213	I O	|	|	|	|	2.56
7.833	0.00	0.39	0.210	I O	|	|	|	|	2.53
7.917	0.00	0.39	0.207	I O	|	|	|	|	2.49
8.000	0.00	0.39	0.205	I O	|	|	|	|	2.45
8.083	0.00	0.39	0.202	I O	|	|	|	|	2.42
8.167	0.00	0.39	0.199	I O	|	|	|	|	2.38
8.250	0.00	0.39	0.197	I O	|	|	|	|	2.34
8.333	0.00	0.39	0.194	I O	|	|	|	|	2.31
8.417	0.00	0.39	0.191	I O	|	|	|	|	2.27
8.500	0.00	0.39	0.188	I O	|	|	|	|	2.23
8.583	0.00	0.39	0.186	I O	|	|	|	|	2.20
8.667	0.00	0.39	0.183	I O	|	|	|	|	2.16
8.750	0.00	0.39	0.180	I O	|	|	|	|	2.12
8.833	0.00	0.39	0.178	I O	|	|	|	|	2.08
8.917	0.00	0.39	0.175	I O	|	|	|	|	2.05
9.000	0.00	0.39	0.172	I O	|	|	|	|	2.01
9.083	0.00	0.39	0.170	I O	|	|	|	|	1.97
9.167	0.00	0.39	0.167	I O	|	|	|	|	1.94
9.250	0.00	0.39	0.164	I O	|	|	|	|	1.90
9.333	0.00	0.39	0.161	I O	|	|	|	|	1.86
9.417	0.00	0.39	0.159	I O	|	|	|	|	1.83
9.500	0.00	0.39	0.156	I O	|	|	|	|	1.79
9.583	0.00	0.39	0.153	I O	|	|	|	|	1.75
9.667	0.00	0.39	0.151	I O	|	|	|	|	1.72
9.750	0.00	0.39	0.148	I O	|	|	|	|	1.68
9.833	0.00	0.39	0.145	I O	|	|	|	|	1.64
9.917	0.00	0.39	0.142	I O	|	|	|	|	1.61
10.000	0.00	0.39	0.140	I O	|	|	|	|	1.57
10.083	0.00	0.39	0.137	I O	|	|	|	|	1.53
10.167	0.00	0.39	0.134	I O	|	|	|	|	1.49
10.250	0.00	0.39	0.132	I O	|	|	|	|	1.46
10.333	0.00	0.39	0.129	I O	|	|	|	|	1.42
10.417	0.00	0.39	0.126	I O	|	|	|	|	1.38
10.500	0.00	0.39	0.123	I O	|	|	|	|	1.35
10.583	0.00	0.39	0.121	I O	|	|	|	|	1.31
10.667	0.00	0.39	0.118	I O	|	|	|	|	1.27
10.750	0.00	0.39	0.115	I O	|	|	|	|	1.24
10.833	0.00	0.39	0.113	I O	|	|	|	|	1.20
10.917	0.00	0.39	0.110	I O	|	|	|	|	1.16
11.000	0.00	0.39	0.107	I O	|	|	|	|	1.13
11.083	0.00	0.39	0.105	I O	|	|	|	|	1.09
11.167	0.00	0.39	0.102	I O	|	|	|	|	1.05
11.250	0.00	0.39	0.099	I O	|	|	|	|	1.02
11.333	0.00	0.39	0.096	I O	|	|	|	|	0.98
11.417	0.00	0.38	0.094	I O	|	|	|	|	0.96
11.500	0.00	0.37	0.091	I O	|	|	|	|	0.93
11.583	0.00	0.36	0.089	I O	|	|	|	|	0.91
11.667	0.00	0.35	0.086	IO	|	|	|	|	0.88
11.750	0.00	0.34	0.084	IO	|	|	|	|	0.86
11.833	0.00	0.33	0.082	IO	|	|	|	|	0.83
11.917	0.00	0.32	0.079	IO	|	|	|	|	0.81
12.000	0.00	0.31	0.077	IO	|	|	|	|	0.79

12.083	0.00	0.30	0.075	IO	|	|	|	|	0.77
12.167	0.00	0.29	0.073	IO	|	|	|	|	0.75
12.250	0.00	0.29	0.071	IO	|	|	|	|	0.73
12.333	0.00	0.28	0.069	IO	|	|	|	|	0.71
12.417	0.00	0.27	0.067	IO	|	|	|	|	0.69
12.500	0.00	0.26	0.066	IO	|	|	|	|	0.67
12.583	0.00	0.26	0.064	IO	|	|	|	|	0.65
12.667	0.00	0.25	0.062	IO	|	|	|	|	0.63
12.750	0.00	0.24	0.060	IO	|	|	|	|	0.62
12.833	0.00	0.24	0.059	IO	|	|	|	|	0.60
12.917	0.00	0.23	0.057	IO	|	|	|	|	0.58
13.000	0.00	0.22	0.056	IO	|	|	|	|	0.57
13.083	0.00	0.22	0.054	IO	|	|	|	|	0.55
13.167	0.00	0.21	0.053	IO	|	|	|	|	0.54
13.250	0.00	0.20	0.051	IO	|	|	|	|	0.52
13.333	0.00	0.20	0.050	IO	|	|	|	|	0.51
13.417	0.00	0.19	0.048	IO	|	|	|	|	0.49
13.500	0.00	0.19	0.047	IO	|	|	|	|	0.48
13.583	0.00	0.18	0.046	IO	|	|	|	|	0.47
13.667	0.00	0.18	0.044	IO	|	|	|	|	0.45
13.750	0.00	0.17	0.043	O	|	|	|	|	0.44
13.833	0.00	0.17	0.042	O	|	|	|	|	0.43
13.917	0.00	0.16	0.041	O	|	|	|	|	0.42
14.000	0.00	0.16	0.040	O	|	|	|	|	0.41
14.083	0.00	0.16	0.039	O	|	|	|	|	0.40
14.167	0.00	0.15	0.038	O	|	|	|	|	0.38
14.250	0.00	0.15	0.037	O	|	|	|	|	0.37
14.333	0.00	0.14	0.036	O	|	|	|	|	0.36
14.417	0.00	0.14	0.035	O	|	|	|	|	0.35
14.500	0.00	0.14	0.034	O	|	|	|	|	0.34
14.583	0.00	0.13	0.033	O	|	|	|	|	0.34
14.667	0.00	0.13	0.032	O	|	|	|	|	0.33
14.750	0.00	0.12	0.031	O	|	|	|	|	0.32
14.833	0.00	0.12	0.030	O	|	|	|	|	0.31
14.917	0.00	0.12	0.029	O	|	|	|	|	0.30
15.000	0.00	0.11	0.029	O	|	|	|	|	0.29
15.083	0.00	0.11	0.028	O	|	|	|	|	0.28
15.167	0.00	0.11	0.027	O	|	|	|	|	0.28
15.250	0.00	0.11	0.026	O	|	|	|	|	0.27
15.333	0.00	0.10	0.026	O	|	|	|	|	0.26
15.417	0.00	0.10	0.025	O	|	|	|	|	0.25

Remaining water in basin = 0.02 (Ac.Ft)

```
****************************HYDROGRAPH DATA****************************
              Number of intervals =   185
              Time interval =    5.0 (Min.)
              Maximum/Peak flow rate =        4.533 (CFS)
              Total volume =       0.681 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*********************************************************************

---------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.100 to Point/Station       10.000
**** STREAM ROUTING SCS CONVEX METHOD ****
```

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_____________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =   1281.00 (Ft.)
Elevation difference =    9.20 (Ft.)
Slope of channel =  0.007182 (Vert/Horiz)
Channel type - Pipe


Pipe length  =  1281.00(Ft.)   Elevation difference =   9.20(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.850(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.850(CFS)
Normal flow depth in pipe =    5.06(In.)
Flow top width inside pipe =    8.93(In.)
Critical Depth =    0.42(Ft.)
Pipe flow velocity =      3.32(Ft/s)
Travel time through pipe =    6.42 min.


Pipe length  =  1281.00(Ft.)   Elevation difference =   9.20(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     4.533(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.533(CFS)
Normal flow depth in pipe =   10.41(In.)
Flow top width inside pipe =   13.83(In.)
Critical Depth =    0.86(Ft.)
Pipe flow velocity =      4.99(Ft/s)
Travel time through pipe =    4.28 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7457   Travel time =   4.28 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.3771
       dt(routing time-step) =   3.19 (min.),   c* =   0.8483

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T  O F  S T O R M
                 R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
             Hydrograph in   5   Minute intervals (CFS)

--------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.1       2.3       3.4       4.5
----------------------------------------------------------------------
  0+ 5       0.0007      0.00  O         |         |         |         |
  0+10       0.0042      0.01  O         |         |         |         |
  0+15       0.0122      0.02  O         |         |         |         |
  0+20       0.0233      0.03  O         |         |         |         |
  0+25       0.0355      0.05  O         |         |         |         |
  0+30       0.0482      0.06  O         |         |         |         |
  0+35       0.0615      0.07  O         |         |         |         |
  0+40       0.0755      0.09  O         |         |         |         |
```

```
0+45       0.0899      0.10  O         |         |         |         |
0+50       0.1042      0.12  OI        |         |         |         |
0+55       0.1181      0.13  |O        |         |         |         |
1+ 0       0.1319      0.14  |O        |         |         |         |
1+ 5       0.1461      0.16  |O        |         |         |         |
1+10       0.1611      0.17  |O        |         |         |         |
1+15       0.1763      0.19  |O        |         |         |         |
1+20       0.1914      0.20  |O        |         |         |         |
1+25       0.2061      0.22  |O        |         |         |         |
1+30       0.2205      0.23  |OI       |         |         |         |
1+35       0.2345      0.25  | O       |         |         |         |
1+40       0.2481      0.26  | O       |         |         |         |
1+45       0.2613      0.27  | O       |         |         |         |
1+50       0.2742      0.28  | O       |         |         |         |
1+55       0.2867      0.30  | O       |         |         |         |
2+ 0       0.2991      0.31  | O       |         |         |         |
2+ 5       0.3117      0.32  | O       |         |         |         |
2+10       0.3245      0.33  | O       |         |         |         |
2+15       0.3374      0.35  | OI      |         |         |         |
2+20       0.3506      0.36  |  O      |         |         |         |
2+25       0.3639      0.37  |  O      |         |         |         |
2+30       0.3771      0.39  |  O      |         |         |         |
2+35       0.3878      0.39  |  O      |         |         |         |
2+40       0.3923      0.39  |  O      |         |         |         |
2+45       0.3929      0.39  |  O      |         |         |         |
2+50       0.3930      0.39  |  O      |         |         |         |
2+55       0.3931      0.39  |  O      |         |         |         |
3+ 0       0.3931      0.39  |  O      |         |         |         |
3+ 5       0.3931      0.39  |  O      |         |         |         |
3+10       0.3931      0.39  |  O      |         |         |         |
3+15       0.3931      0.39  |  O      |         |         |         |
3+20       0.3931      0.39  |  O      |         |         |         |
3+25       0.3931      0.39  |  O      |         |         |         |
3+30       0.3931      0.39  |  O      |         |         |         |
3+35       0.3931      0.39  |  O      |         |         |         |
3+40       0.3931      0.39  |  O      |         |         |         |
3+45       0.3931      0.39  |  O      |         |         |         |
3+50       0.3931      0.39  |  O      |         |         |         |
3+55       0.3931      0.39  |  O      |         |         |         |
4+ 0       0.3931      0.39  |  O      |         |         |         |
4+ 5       0.3931      0.39  |  O      |         |         |         |
4+10       0.3931      0.39  |  O      |         |         |         |
4+15       0.3931      0.39  |  O      |         |         |         |
4+20       0.3931      0.39  |  O      |         |         |         |
4+25       0.3931      0.39  |  O      |         |         |         |
4+30       0.3931      0.39  |  O      |         |         |         |
4+35       0.4724      0.65  |   OI    |         |         |         |
4+40       0.7932      1.20  |     O   I         |         |         |
4+45       1.2647      1.61  |         |O  I     |         |         |
4+50       1.6503      1.91  |         |   O I   |         |         |
4+55       1.9435      2.14  |         |      OI |         |         |
5+ 0       2.1667      2.32  |         |        OI         |         |
5+ 5       2.3573      2.51  |         |         O I       |         |
5+10       2.5701      2.78  |         |         | O I     |         |
5+15       2.8482      3.11  |         |         |    O I  |         |
5+20       3.1846      3.48  |         |         |       O I         |
5+25       3.5500      3.86  |         |         |         |O  I     |
5+30       3.9519      4.31  |         |         |         |   O   I |
5+35       4.3265      4.53  |         |         |         |       O I
5+40       4.3695      4.10  |         |         |         |     I O |
5+45       3.8903      3.28  |         |         |       I |   O     |
5+50       3.1294      2.49  |         |         |I     O  |         |
5+55       2.3846      1.83  |         |     I   |O        |         |
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 6+ 0       1.7591      1.32  |         |I   O    |         |         |
 6+ 5       1.2625      0.92  |       I |O        |         |         |
 6+10       0.8843      0.63  |    I O  |         |         |         |
 6+15       0.6087      0.43  |  I O    |         |         |         |
 6+20       0.4459      0.39  |  O      |         |         |         |
 6+25       0.4011      0.39  |  O      |         |         |         |
 6+30       0.3943      0.39  |  O      |         |         |         |
 6+35       0.3932      0.39  |  O      |         |         |         |
 6+40       0.3931      0.39  |  O      |         |         |         |
 6+45       0.3931      0.39  |  O      |         |         |         |
 6+50       0.3931      0.39  |  O      |         |         |         |
 6+55       0.3931      0.39  |  O      |         |         |         |
 7+ 0       0.3931      0.39  |  O      |         |         |         |
 7+ 5       0.3931      0.39  |  O      |         |         |         |
 7+10       0.3931      0.39  |  O      |         |         |         |
 7+15       0.3931      0.39  |  O      |         |         |         |
 7+20       0.3931      0.39  |  O      |         |         |         |
 7+25       0.3931      0.39  |  O      |         |         |         |
 7+30       0.3931      0.39  |  O      |         |         |         |
 7+35       0.3931      0.39  |  O      |         |         |         |
 7+40       0.3931      0.39  |  O      |         |         |         |
 7+45       0.3931      0.39  |  O      |         |         |         |
 7+50       0.3931      0.39  |  O      |         |         |         |
 7+55       0.3931      0.39  |  O      |         |         |         |
 8+ 0       0.3931      0.39  |  O      |         |         |         |
 8+ 5       0.3931      0.39  |  O      |         |         |         |
 8+10       0.3931      0.39  |  O      |         |         |         |
 8+15       0.3931      0.39  |  O      |         |         |         |
 8+20       0.3931      0.39  |  O      |         |         |         |
 8+25       0.3931      0.39  |  O      |         |         |         |
 8+30       0.3931      0.39  |  O      |         |         |         |
 8+35       0.3931      0.39  |  O      |         |         |         |
 8+40       0.3931      0.39  |  O      |         |         |         |
 8+45       0.3931      0.39  |  O      |         |         |         |
 8+50       0.3931      0.39  |  O      |         |         |         |
 8+55       0.3931      0.39  |  O      |         |         |         |
 9+ 0       0.3931      0.39  |  O      |         |         |         |
 9+ 5       0.3931      0.39  |  O      |         |         |         |
 9+10       0.3931      0.39  |  O      |         |         |         |
 9+15       0.3931      0.39  |  O      |         |         |         |
 9+20       0.3931      0.39  |  O      |         |         |         |
 9+25       0.3931      0.39  |  O      |         |         |         |
 9+30       0.3931      0.39  |  O      |         |         |         |
 9+35       0.3931      0.39  |  O      |         |         |         |
 9+40       0.3931      0.39  |  O      |         |         |         |
 9+45       0.3931      0.39  |  O      |         |         |         |
 9+50       0.3931      0.39  |  O      |         |         |         |
 9+55       0.3931      0.39  |  O      |         |         |         |
10+ 0       0.3931      0.39  |  O      |         |         |         |
10+ 5       0.3931      0.39  |  O      |         |         |         |
10+10       0.3931      0.39  |  O      |         |         |         |
10+15       0.3931      0.39  |  O      |         |         |         |
10+20       0.3931      0.39  |  O      |         |         |         |
10+25       0.3931      0.39  |  O      |         |         |         |
10+30       0.3931      0.39  |  O      |         |         |         |
10+35       0.3931      0.39  |  O      |         |         |         |
10+40       0.3931      0.39  |  O      |         |         |         |
10+45       0.3931      0.39  |  O      |         |         |         |
10+50       0.3931      0.39  |  O      |         |         |         |
10+55       0.3931      0.39  |  O      |         |         |         |
11+ 0       0.3931      0.39  |  O      |         |         |         |
11+ 5       0.3931      0.39  |  O      |         |         |         |
11+10       0.3931      0.39  |  O      |         |         |         |
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   11+15       0.3931      0.39  |  O      |         |         |         |
   11+20       0.3911      0.39  |  O      |         |         |         |
   11+25       0.3842      0.38  |  O      |         |         |         |
   11+30       0.3743      0.37  |  O      |         |         |         |
   11+35       0.3642      0.36  |  O      |         |         |         |
   11+40       0.3543      0.35  |  O      |         |         |         |
   11+45       0.3447      0.34  | IO      |         |         |         |
   11+50       0.3353      0.33  | O       |         |         |         |
   11+55       0.3261      0.32  | O       |         |         |         |
   12+ 0       0.3172      0.31  | O       |         |         |         |
   12+ 5       0.3086      0.30  | O       |         |         |         |
   12+10       0.3002      0.29  | O       |         |         |         |
   12+15       0.2920      0.29  | O       |         |         |         |
   12+20       0.2841      0.28  | O       |         |         |         |
   12+25       0.2763      0.27  | O       |         |         |         |
   12+30       0.2688      0.26  | O       |         |         |         |
   12+35       0.2615      0.26  | O       |         |         |         |
   12+40       0.2543      0.25  | O       |         |         |         |
   12+45       0.2474      0.24  | O       |         |         |         |
   12+50       0.2407      0.24  | O       |         |         |         |
   12+55       0.2341      0.23  | O       |         |         |         |
   13+ 0       0.2277      0.22  |IO       |         |         |         |
   13+ 5       0.2215      0.22  |O        |         |         |         |
   13+10       0.2155      0.21  |O        |         |         |         |
   13+15       0.2096      0.20  |O        |         |         |         |
   13+20       0.2039      0.20  |O        |         |         |         |
   13+25       0.1984      0.19  |O        |         |         |         |
   13+30       0.1929      0.19  |O        |         |         |         |
   13+35       0.1877      0.18  |O        |         |         |         |
   13+40       0.1826      0.18  |O        |         |         |         |
   13+45       0.1776      0.17  |O        |         |         |         |
   13+50       0.1728      0.17  |O        |         |         |         |
   13+55       0.1681      0.16  |O        |         |         |         |
   14+ 0       0.1635      0.16  |O        |         |         |         |
   14+ 5       0.1590      0.16  |O        |         |         |         |
   14+10       0.1547      0.15  |O        |         |         |         |
   14+15       0.1505      0.15  |O        |         |         |         |
   14+20       0.1464      0.14  |O        |         |         |         |
   14+25       0.1424      0.14  |O        |         |         |         |
   14+30       0.1385      0.14  |O        |         |         |         |
   14+35       0.1347      0.13  |O        |         |         |         |
   14+40       0.1311      0.13  |O        |         |         |         |
   14+45       0.1275      0.12  |O        |         |         |         |
   14+50       0.1240      0.12  |O        |         |         |         |
   14+55       0.1206      0.12  |O        |         |         |         |
   15+ 0       0.1174      0.11  |O        |         |         |         |
   15+ 5       0.1142      0.11  IO        |         |         |         |
   15+10       0.1110      0.11  O         |         |         |         |
   15+15       0.1080      0.11  O         |         |         |         |
   15+20       0.1051      0.10  O         |         |         |         |
   15+25       0.1022      0.10  O         |         |         |         |
   15+30       0.0696      0.00  O         |         |         |         |
   15+35       0.0106      0.00  O         |         |         |         |
   15+40       0.0016      0.00  O         |         |         |         |
   15+45       0.0000      0.00  O         |         |         |         |
-----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =   189
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        4.369 (CFS)
                 Total volume =       0.681 (Ac.Ft)
            Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
```

```
       Peak (CFS)       0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*********************************************************************

---------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      602.000
**** STORE OR DELETE CURRENT HYDROGRAPH ****
______________________________________________________________________
Current stream hydrograph saved in file 27259EPOND106.rte
****************************HYDROGRAPH DATA***************************
              Number of intervals =     0
              Time interval =    0.0 (Min.)
              Maximum/Peak flow rate =        0.000 (CFS)
              Total volume =       0.000 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)       0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*********************************************************************

---------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                        Study date: 02/21/18

---------------------------------------------------------------------
PM #13523
MILL CREEK PROMENADE
AREA E (Pond E)- Q10yr24hr(ONSITE)- Unit Hydrograph Method

--------------------------------------------------------------------

Program License Serial Number 4066

--------------------------------------------------------------------
********************* HYDROGRAPH INFORMATION **********************

             From study/file name: 27259UHE2410.rte
****************************HYDROGRAPH DATA****************************
             Number of intervals =   292
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        1.974 (CFS)
             Total volume =       0.971 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      501.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.22(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.22(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)
```

CALCULATED OUTFLOW DATA AT DEPTH = 5.22(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 5.22(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 2.20(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.52(Ft.) Capacity = 21.93(CFS)

Total outflow at this depth = 22.32(CFS)

Total number of inflow hydrograph intervals = 292
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.098	0.393	0.097	0.099
3.220	0.261	0.393	0.260	0.262
5.220	0.652	22.322	0.575	0.729

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 0.5 0.99 1.48 1.97	Depth (Ft.)
0.083	0.04	0.00	0.000	O | | | |	0.00
0.167	0.09	0.00	0.001	OI | | | |	0.01
0.250	0.10	0.00	0.001	OI | | | |	0.01
0.333	0.12	0.01	0.002	O I | | | |	0.02
0.417	0.15	0.01	0.003	O I | | | |	0.03
0.500	0.15	0.02	0.004	O I | | | |	0.04
0.583	0.15	0.02	0.005	O I | | | |	0.05
0.667	0.16	0.02	0.006	O I | | | |	0.06
0.750	0.16	0.03	0.007	O I | | | |	0.07
0.833	0.18	0.03	0.007	O I | | | |	0.08
0.917	0.20	0.03	0.009	O I | | | |	0.09
1.000	0.20	0.04	0.010	O I | | | |	0.10
1.083	0.18	0.04	0.011	O I | | | |	0.11
1.167	0.16	0.05	0.012	O I | | | |	0.12
1.250	0.16	0.05	0.012	O I | | | |	0.13
1.333	0.16	0.05	0.013	O I | | | |	0.13
1.417	0.16	0.06	0.014	O I | | | |	0.14
1.500	0.16	0.06	0.015	O I | | | |	0.15
1.583	0.16	0.06	0.015	O I | | | |	0.16

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1.667    0.16    0.06      0.016  |OI      |        |        |        |      0.16
1.750    0.16    0.07      0.016  |OI      |        |        |        |      0.17
1.833    0.18    0.07      0.017  |OI      |        |        |        |      0.17
1.917    0.20    0.07      0.018  |O I     |        |        |        |      0.18
2.000    0.20    0.08      0.019  |O I     |        |        |        |      0.19
2.083    0.21    0.08      0.020  |O I     |        |        |        |      0.20
2.167    0.21    0.08      0.021  |O I     |        |        |        |      0.21
2.250    0.21    0.09      0.021  |O I     |        |        |        |      0.22
2.333    0.21    0.09      0.022  |O I     |        |        |        |      0.23
2.417    0.21    0.09      0.023  |O I     |        |        |        |      0.24
2.500    0.21    0.10      0.024  |O I     |        |        |        |      0.24
2.583    0.23    0.10      0.025  |O I     |        |        |        |      0.25
2.667    0.25    0.10      0.026  |O  I    |        |        |        |      0.26
2.750    0.26    0.11      0.027  |O  I    |        |        |        |      0.27
2.833    0.15    0.11      0.027  |OI      |        |        |        |      0.28
2.917    0.04    0.11      0.027  IO       |        |        |        |      0.28
3.000    0.02    0.11      0.027  IO       |        |        |        |      0.27
3.083    0.01    0.10      0.026  IO       |        |        |        |      0.27
3.167    0.01    0.10      0.025  IO       |        |        |        |      0.26
3.250    0.01    0.10      0.025  IO       |        |        |        |      0.25
3.333    0.01    0.10      0.024  IO       |        |        |        |      0.25
3.417    0.01    0.09      0.023  IO       |        |        |        |      0.24
3.500    0.01    0.09      0.023  IO       |        |        |        |      0.23
3.583    0.01    0.09      0.022  IO       |        |        |        |      0.23
3.667    0.01    0.09      0.022  IO       |        |        |        |      0.22
3.750    0.01    0.09      0.021  IO       |        |        |        |      0.22
3.833    0.04    0.08      0.021  IO       |        |        |        |      0.21
3.917    0.07    0.08      0.021  |O       |        |        |        |      0.21
4.000    0.08    0.08      0.021  |O       |        |        |        |      0.21
4.083    0.08    0.08      0.021  |O       |        |        |        |      0.21
4.167    0.08    0.08      0.021  |O       |        |        |        |      0.21
4.250    0.08    0.08      0.021  |O       |        |        |        |      0.21
4.333    0.11    0.08      0.021  |O       |        |        |        |      0.21
4.417    0.14    0.08      0.021  |OI      |        |        |        |      0.22
4.500    0.15    0.09      0.021  |OI      |        |        |        |      0.22
4.583    0.15    0.09      0.022  |OI      |        |        |        |      0.22
4.667    0.15    0.09      0.022  |OI      |        |        |        |      0.23
4.750    0.16    0.09      0.023  |OI      |        |        |        |      0.23
4.833    0.18    0.09      0.023  |OI      |        |        |        |      0.24
4.917    0.21    0.10      0.024  |O I     |        |        |        |      0.25
5.000    0.22    0.10      0.025  |O I     |        |        |        |      0.25
5.083    0.17    0.10      0.026  |OI      |        |        |        |      0.26
5.167    0.12    0.10      0.026  |O       |        |        |        |      0.26
5.250    0.11    0.10      0.026  |O       |        |        |        |      0.26
5.333    0.13    0.10      0.026  |OI      |        |        |        |      0.26
5.417    0.16    0.11      0.026  |OI      |        |        |        |      0.27
5.500    0.16    0.11      0.027  |OI      |        |        |        |      0.27
5.583    0.19    0.11      0.027  |O I     |        |        |        |      0.28
5.667    0.22    0.11      0.028  |O I     |        |        |        |      0.28
5.750    0.23    0.11      0.029  |O I     |        |        |        |      0.29
5.833    0.23    0.12      0.029  |O I     |        |        |        |      0.30
5.917    0.24    0.12      0.030  |O I     |        |        |        |      0.31
6.000    0.24    0.12      0.031  | OI     |        |        |        |      0.32
6.083    0.27    0.13      0.032  | O I    |        |        |        |      0.32
6.167    0.29    0.13      0.033  | O I    |        |        |        |      0.33
6.250    0.30    0.14      0.034  | O I    |        |        |        |      0.35
6.333    0.30    0.14      0.035  | O I    |        |        |        |      0.36
6.417    0.31    0.15      0.036  | O I    |        |        |        |      0.37
6.500    0.31    0.15      0.037  | O I    |        |        |        |      0.38
6.583    0.34    0.15      0.038  | O  I   |        |        |        |      0.39
6.667    0.36    0.16      0.040  | O  I   |        |        |        |      0.41
6.750    0.37    0.17      0.041  | O   I  |        |        |        |      0.42
6.833    0.37    0.17      0.043  | O   I  |        |        |        |      0.43
```

```
 6.917    0.38    0.18      0.044  | O   I |       |       |       |     0.45
 7.000    0.38    0.18      0.045  | O   I |       |       |       |     0.46
 7.083    0.38    0.19      0.047  |  O  I |       |       |       |     0.48
 7.167    0.38    0.19      0.048  |  O  I |       |       |       |     0.49
 7.250    0.38    0.20      0.049  |  O  I |       |       |       |     0.50
 7.333    0.41    0.20      0.051  |  O  I |       |       |       |     0.52
 7.417    0.44    0.21      0.052  |  O   I|       |       |       |     0.53
 7.500    0.44    0.22      0.054  |  O   I|       |       |       |     0.55
 7.583    0.47    0.22      0.055  |  O   I|       |       |       |     0.56
 7.667    0.50    0.23      0.057  |  O    I       |       |       |     0.58
 7.750    0.51    0.24      0.059  |  O    I       |       |       |     0.60
 7.833    0.54    0.24      0.061  |  O    I       |       |       |     0.62
 7.917    0.57    0.25      0.063  |   O   |I      |       |       |     0.64
 8.000    0.58    0.26      0.065  |   O   |I      |       |       |     0.67
 8.083    0.63    0.27      0.068  |   O   | I     |       |       |     0.69
 8.167    0.69    0.28      0.070  |   O   |  I    |       |       |     0.72
 8.250    0.70    0.29      0.073  |   O   |  I    |       |       |     0.75
 8.333    0.71    0.30      0.076  |   O   |  I    |       |       |     0.78
 8.417    0.71    0.32      0.079  |    O  |  I    |       |       |     0.80
 8.500    0.71    0.33      0.081  |    O  |  I    |       |       |     0.83
 8.583    0.74    0.34      0.084  |    O  |   I   |       |       |     0.86
 8.667    0.77    0.35      0.087  |    O  |   I   |       |       |     0.89
 8.750    0.78    0.36      0.090  |    O  |   I   |       |       |     0.92
 8.833    0.81    0.37      0.093  |     O |    I  |       |       |     0.95
 8.917    0.84    0.38      0.096  |     O |    I  |       |       |     0.98
 9.000    0.84    0.39      0.099  |     O |    I  |       |       |     1.01
 9.083    0.90    0.39      0.102  |     O |     I |       |       |     1.06
 9.167    0.96    0.39      0.106  |     O |      I|       |       |     1.11
 9.250    0.97    0.39      0.110  |     O |      I|       |       |     1.16
 9.333    1.00    0.39      0.114  |     O |       I       |       |     1.22
 9.417    1.03    0.39      0.118  |     O |       I       |       |     1.28
 9.500    1.04    0.39      0.123  |     O |       I       |       |     1.34
 9.583    1.07    0.39      0.127  |     O |       |I      |       |     1.40
 9.667    1.10    0.39      0.132  |     O |       |I      |       |     1.46
 9.750    1.11    0.39      0.137  |     O |       |I      |       |     1.53
 9.833    1.14    0.39      0.142  |     O |       | I     |       |     1.60
 9.917    1.17    0.39      0.147  |     O |       | I     |       |     1.67
10.000    1.17    0.39      0.153  |     O |       |  I    |       |     1.74
10.083    0.99    0.39      0.157  |     O |       I       |       |     1.81
10.167    0.80    0.39      0.161  |     O |   I   |       |       |     1.85
10.250    0.76    0.39      0.163  |     O |   I   |       |       |     1.89
10.333    0.74    0.39      0.166  |     O |   I   |       |       |     1.92
10.417    0.74    0.39      0.168  |     O |  I    |       |       |     1.96
10.500    0.74    0.39      0.171  |     O |  I    |       |       |     1.99
10.583    0.87    0.39      0.173  |     O |     I |       |       |     2.03
10.667    1.01    0.39      0.177  |     O |       I       |       |     2.08
10.750    1.04    0.39      0.182  |     O |       I       |       |     2.14
10.833    1.06    0.39      0.186  |     O |       |I      |       |     2.20
10.917    1.06    0.39      0.191  |     O |       |I      |       |     2.26
11.000    1.06    0.39      0.195  |     O |       |I      |       |     2.32
11.083    1.04    0.39      0.200  |     O |       I       |       |     2.39
11.167    1.01    0.39      0.204  |     O |       I       |       |     2.45
11.250    1.00    0.39      0.208  |     O |       I       |       |     2.50
11.333    1.00    0.39      0.213  |     O |       I       |       |     2.56
11.417    1.00    0.39      0.217  |     O |       I       |       |     2.62
11.500    1.00    0.39      0.221  |     O |       I       |       |     2.67
11.583    0.95    0.39      0.225  |     O |      I|       |       |     2.73
11.667    0.90    0.39      0.229  |     O |     I |       |       |     2.78
11.750    0.89    0.39      0.232  |     O |     I |       |       |     2.83
11.833    0.91    0.39      0.236  |     O |     I |       |       |     2.87
11.917    0.94    0.39      0.239  |     O |      I|       |       |     2.92
12.000    0.94    0.39      0.243  |     O |      I|       |       |     2.97
12.083    1.13    0.39      0.247  |     O |       | I     |       |     3.04
```

12.167	1.33	0.39	0.253	|	O |	|	I |	|	3.11
12.250	1.37	0.39	0.260	|	O |	|	I |	|	3.20
12.333	1.41	0.66	0.266	|	| O	|	I |	|	3.24
12.417	1.45	0.91	0.270	|	| O |	|	I|	|	3.27
12.500	1.45	1.08	0.273	|	|	|O	I|	|	3.28
12.583	1.51	1.21	0.276	|	|	| O	I |	|	3.29
12.667	1.57	1.32	0.278	|	|	| O	|I |	|	3.30
12.750	1.58	1.40	0.279	|	|	| O	|I |	|	3.31
12.833	1.61	1.47	0.280	|	|	| O|	I |	|	3.32
12.917	1.64	1.52	0.281	|	|	| O	I |	|	3.32
13.000	1.65	1.56	0.282	|	|	|	|OI |	|	3.33
13.083	1.79	1.61	0.283	|	|	|	O I |	|	3.33
13.167	1.93	1.69	0.284	|	|	|	O | I|	|	3.34
13.250	1.96	1.77	0.286	|	|	|	O | I|	|	3.35
13.333	1.97	1.83	0.287	|	|	|	O I|	|	3.35
13.417	1.97	1.88	0.287	|	|	|	OI|	|	3.36
13.500	1.97	1.91	0.288	|	|	|	O I	|	3.36
13.583	1.68	1.88	0.288	|	|	|	I O |	|	3.36
13.667	1.38	1.77	0.286	|	|	|	I | O	|	3.35
13.750	1.32	1.63	0.283	|	|	|	I | O	|	3.33
13.833	1.29	1.53	0.281	|	|	|	I O	|	3.32
13.917	1.28	1.45	0.280	|	|	|	I O|	|	3.32
14.000	1.28	1.40	0.279	|	|	|	I O |	|	3.31
14.083	1.39	1.38	0.279	|	|	|	O |	|	3.31
14.167	1.50	1.40	0.279	|	|	|	O I	|	3.31
14.250	1.53	1.44	0.280	|	|	|	OI	|	3.32
14.333	1.51	1.46	0.280	|	|	|	OI	|	3.32
14.417	1.49	1.48	0.280	|	|	|	OI	|	3.32
14.500	1.48	1.48	0.280	|	|	|	OI	|	3.32
14.583	1.48	1.48	0.280	|	|	|	OI	|	3.32
14.667	1.48	1.48	0.280	|	|	|	OI	|	3.32
14.750	1.48	1.48	0.280	|	|	|	OI	|	3.32
14.833	1.46	1.48	0.280	|	|	|	O|	|	3.32
14.917	1.43	1.47	0.280	|	|	|	O|	|	3.32
15.000	1.42	1.45	0.280	|	|	|	O|	|	3.32
15.083	1.40	1.44	0.280	|	|	|	IO|	|	3.32
15.167	1.37	1.42	0.279	|	|	|	IO|	|	3.31
15.250	1.36	1.40	0.279	|	|	|	O |	|	3.31
15.333	1.34	1.39	0.279	|	|	|	IO |	|	3.31
15.417	1.31	1.36	0.278	|	|	|	IO |	|	3.31
15.500	1.30	1.35	0.278	|	|	|	O |	|	3.31
15.583	1.19	1.31	0.277	|	|	|	I O |	|	3.30
15.667	1.08	1.26	0.276	|	|	|I O |	|	3.30
15.750	1.06	1.20	0.275	|	|	|I O |	|	3.29
15.833	1.05	1.15	0.275	|	|	|IO |	|	3.29
15.917	1.05	1.12	0.274	|	|	|IO |	|	3.29
16.000	1.05	1.10	0.274	|	|	|O |	|	3.28
16.083	0.65	1.02	0.272	|	| I	O |	|	3.28
16.167	0.24	0.83	0.269	| I	| O |	|	|	3.26
16.250	0.15	0.62	0.265	| I	| O	|	|	3.24
16.333	0.12	0.47	0.262	|I	O|	|	|	3.23
16.417	0.11	0.39	0.260	|I	O |	|	|	3.21
16.500	0.11	0.39	0.258	|I	O |	|	|	3.18
16.583	0.08	0.39	0.256	|I	O |	|	|	3.15
16.667	0.05	0.39	0.254	I	O |	|	|	3.12
16.750	0.05	0.39	0.252	I	O |	|	|	3.09
16.833	0.05	0.39	0.249	I	O |	|	|	3.06
16.917	0.05	0.39	0.247	I	O |	|	|	3.03
17.000	0.05	0.39	0.244	I	O |	|	|	2.99
17.083	0.10	0.39	0.242	|I	O |	|	|	2.96
17.167	0.16	0.39	0.240	| I	O |	|	|	2.94
17.250	0.17	0.39	0.239	| I	O |	|	|	2.92
17.333	0.18	0.39	0.237	| I	O |	|	|	2.90

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17.417    0.18    0.39      0.236  | I   O |        |        |        |     2.88
17.500    0.18    0.39      0.234  | I   O |        |        |        |     2.86
17.583    0.18    0.39      0.233  | I   O |        |        |        |     2.84
17.667    0.18    0.39      0.231  | I   O |        |        |        |     2.82
17.750    0.18    0.39      0.230  | I   O |        |        |        |     2.80
17.833    0.16    0.39      0.228  | I   O |        |        |        |     2.78
17.917    0.13    0.39      0.227  | I   O |        |        |        |     2.75
18.000    0.12    0.39      0.225  | I   O |        |        |        |     2.73
18.083    0.12    0.39      0.223  |I    O |        |        |        |     2.70
18.167    0.12    0.39      0.221  |I    O |        |        |        |     2.68
18.250    0.12    0.39      0.219  |I    O |        |        |        |     2.65
18.333    0.12    0.39      0.217  |I    O |        |        |        |     2.63
18.417    0.12    0.39      0.216  | I   O |        |        |        |     2.60
18.500    0.12    0.39      0.214  | I   O |        |        |        |     2.58
18.583    0.10    0.39      0.212  |I    O |        |        |        |     2.55
18.667    0.07    0.39      0.210  |I    O |        |        |        |     2.52
18.750    0.07    0.39      0.207  |I    O |        |        |        |     2.49
18.833    0.04    0.39      0.205  I     O |        |        |        |     2.46
18.917    0.01    0.39      0.203  I     O |        |        |        |     2.42
19.000    0.00    0.39      0.200  I     O |        |        |        |     2.39
19.083    0.03    0.39      0.197  I     O |        |        |        |     2.35
19.167    0.06    0.39      0.195  I     O |        |        |        |     2.32
19.250    0.06    0.39      0.193  |I    O |        |        |        |     2.29
19.333    0.09    0.39      0.190  |I    O |        |        |        |     2.26
19.417    0.12    0.39      0.188  |I    O |        |        |        |     2.23
19.500    0.13    0.39      0.187  | I   O |        |        |        |     2.21
19.583    0.10    0.39      0.185  |I    O |        |        |        |     2.18
19.667    0.08    0.39      0.183  |I    O |        |        |        |     2.15
19.750    0.07    0.39      0.180  |I    O |        |        |        |     2.12
19.833    0.04    0.39      0.178  I     O |        |        |        |     2.09
19.917    0.02    0.39      0.176  I     O |        |        |        |     2.06
20.000    0.01    0.39      0.173  I     O |        |        |        |     2.02
20.083    0.04    0.39      0.170  I     O |        |        |        |     1.99
20.167    0.06    0.39      0.168  |I    O |        |        |        |     1.95
20.250    0.07    0.39      0.166  |I    O |        |        |        |     1.92
20.333    0.07    0.39      0.164  |I    O |        |        |        |     1.89
20.417    0.07    0.39      0.161  |I    O |        |        |        |     1.86
20.500    0.07    0.39      0.159  |I    O |        |        |        |     1.83
20.583    0.07    0.39      0.157  |I    O |        |        |        |     1.80
20.667    0.08    0.39      0.155  |I    O |        |        |        |     1.77
20.750    0.08    0.39      0.153  |I    O |        |        |        |     1.74
20.833    0.05    0.39      0.150  I     O |        |        |        |     1.71
20.917    0.02    0.39      0.148  I     O |        |        |        |     1.68
21.000    0.02    0.39      0.145  I     O |        |        |        |     1.65
21.083    0.04    0.39      0.143  I     O |        |        |        |     1.61
21.167    0.07    0.39      0.141  |I    O |        |        |        |     1.58
21.250    0.08    0.39      0.138  |I    O |        |        |        |     1.55
21.333    0.05    0.39      0.136  I     O |        |        |        |     1.52
21.417    0.03    0.39      0.134  I     O |        |        |        |     1.49
21.500    0.02    0.39      0.131  I     O |        |        |        |     1.45
21.583    0.04    0.39      0.129  I     O |        |        |        |     1.42
21.667    0.07    0.39      0.126  |I    O |        |        |        |     1.39
21.750    0.08    0.39      0.124  |I    O |        |        |        |     1.36
21.833    0.05    0.39      0.122  I     O |        |        |        |     1.32
21.917    0.03    0.39      0.119  I     O |        |        |        |     1.29
22.000    0.02    0.39      0.117  I     O |        |        |        |     1.26
22.083    0.05    0.39      0.114  I     O |        |        |        |     1.22
22.167    0.07    0.39      0.112  |I    O |        |        |        |     1.19
22.250    0.08    0.39      0.110  |I    O |        |        |        |     1.16
22.333    0.06    0.39      0.108  I     O |        |        |        |     1.13
22.417    0.03    0.39      0.105  I     O |        |        |        |     1.10
22.500    0.02    0.39      0.103  I     O |        |        |        |     1.06
22.583    0.02    0.39      0.100  I     O |        |        |        |     1.03
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22.667    0.02    0.39      0.098  I     O |       |       |       |     1.00
22.750    0.02    0.38      0.095  I     O |       |       |       |     0.97
22.833    0.02    0.37      0.093  I     O |       |       |       |     0.95
22.917    0.02    0.36      0.090  I    O  |       |       |       |     0.92
23.000    0.02    0.35      0.088  I    O  |       |       |       |     0.90
23.083    0.02    0.34      0.086  I    O  |       |       |       |     0.88
23.167    0.02    0.34      0.084  I    O  |       |       |       |     0.85
23.250    0.02    0.33      0.081  I    O  |       |       |       |     0.83
23.333    0.02    0.32      0.079  I    O  |       |       |       |     0.81
23.417    0.02    0.31      0.077  I    O  |       |       |       |     0.79
23.500    0.02    0.30      0.075  I   O   |       |       |       |     0.77
23.583    0.02    0.30      0.074  I   O   |       |       |       |     0.75
23.667    0.02    0.29      0.072  I   O   |       |       |       |     0.73
23.750    0.02    0.28      0.070  I   O   |       |       |       |     0.71
23.833    0.02    0.27      0.068  I   O   |       |       |       |     0.70
23.917    0.02    0.27      0.067  I   O   |       |       |       |     0.68
24.000    0.02    0.26      0.065  I   O   |       |       |       |     0.66
24.083    0.01    0.25      0.063  I   O   |       |       |       |     0.65
24.167    0.00    0.25      0.062  I   O   |       |       |       |     0.63
24.250    0.00    0.24      0.060  I  O    |       |       |       |     0.61
24.333    0.00    0.23      0.058  I  O    |       |       |       |     0.59
24.417    0.00    0.23      0.057  I  O    |       |       |       |     0.58
24.500    0.00    0.22      0.055  I  O    |       |       |       |     0.56
24.583    0.00    0.22      0.054  I  O    |       |       |       |     0.55
24.667    0.00    0.21      0.052  I  O    |       |       |       |     0.53
24.750    0.00    0.20      0.051  I  O    |       |       |       |     0.52
24.833    0.00    0.20      0.049  I  O    |       |       |       |     0.50
24.917    0.00    0.19      0.048  I  O    |       |       |       |     0.49
25.000    0.00    0.19      0.047  I  O    |       |       |       |     0.48
25.083    0.00    0.18      0.045  I O     |       |       |       |     0.46
25.167    0.00    0.18      0.044  I O     |       |       |       |     0.45
25.250    0.00    0.17      0.043  I O     |       |       |       |     0.44
25.333    0.00    0.17      0.042  I O     |       |       |       |     0.43
25.417    0.00    0.16      0.041  I O     |       |       |       |     0.42
25.500    0.00    0.16      0.040  I O     |       |       |       |     0.40
25.583    0.00    0.15      0.039  I O     |       |       |       |     0.39
25.667    0.00    0.15      0.037  I O     |       |       |       |     0.38
25.750    0.00    0.15      0.036  I O     |       |       |       |     0.37
25.833    0.00    0.14      0.035  I O     |       |       |       |     0.36
25.917    0.00    0.14      0.034  I O     |       |       |       |     0.35
26.000    0.00    0.13      0.034  I O     |       |       |       |     0.34
26.083    0.00    0.13      0.033  I O     |       |       |       |     0.33
26.167    0.00    0.13      0.032  I O     |       |       |       |     0.32
26.250    0.00    0.12      0.031  I O     |       |       |       |     0.32
26.333    0.00    0.12      0.030  IO      |       |       |       |     0.31
26.417    0.00    0.12      0.029  IO      |       |       |       |     0.30
26.500    0.00    0.11      0.028  IO      |       |       |       |     0.29
26.583    0.00    0.11      0.028  IO      |       |       |       |     0.28
26.667    0.00    0.11      0.027  IO      |       |       |       |     0.27
26.750    0.00    0.10      0.026  IO      |       |       |       |     0.27
26.833    0.00    0.10      0.025  IO      |       |       |       |     0.26
26.917    0.00    0.10      0.025  IO      |       |       |       |     0.25


      Remaining water in basin =    0.02 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   323
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        1.909 (CFS)
                  Total volume =       0.947 (Ac.Ft)
            Status of hydrographs being held in storage
```

```
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.100 to Point/Station       10.000
**** STREAM ROUTING SCS CONVEX METHOD ****
______________________________________________________________________
HYDROGRAPH STREAM ROUTING DATA:
Length of stream =   1281.00 (Ft.)
Elevation difference =    9.20 (Ft.)
Slope of channel =  0.007182 (Vert/Horiz)
Channel type - Pipe


Pipe length  =  1281.00(Ft.)   Elevation difference =   9.20(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     0.491(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.491(CFS)
Normal flow depth in pipe =    3.68(In.)
Flow top width inside pipe =    8.85(In.)
Critical Depth =    0.32(Ft.)
Pipe flow velocity =      2.89(Ft/s)
Travel time through pipe =    7.38 min.


Pipe length  =  1281.00(Ft.)   Elevation difference =   9.20(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     1.909(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.909(CFS)
Normal flow depth in pipe =    6.93(In.)
Flow top width inside pipe =   11.86(In.)
Critical Depth =    0.59(Ft.)
Pipe flow velocity =      4.07(Ft/s)
Travel time through pipe =    5.25 min.


********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7052   Travel time =   5.25 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   1.2338
       dt(routing time-step) =   3.70 (min.),   c* =   0.7785

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
              R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)
```

```
     ----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0         0.5       1.0       1.4       1.9
-----------------------------------------------------------------------------
  0+ 5       0.0001      0.00  O         |         |         |         |
  0+10       0.0009      0.00  O         |         |         |         |
  0+15       0.0026      0.00  O         |         |         |         |
  0+20       0.0050      0.01  O         |         |         |         |
  0+25       0.0079      0.01  O         |         |         |         |
  0+30       0.0113      0.02  O         |         |         |         |
  0+35       0.0150      0.02  O         |         |         |         |
  0+40       0.0188      0.02  O         |         |         |         |
  0+45       0.0225      0.03  O         |         |         |         |
  0+50       0.0262      0.03  O         |         |         |         |
  0+55       0.0301      0.03  O         |         |         |         |
  1+ 0       0.0343      0.04  O         |         |         |         |
  1+ 5       0.0388      0.04  O         |         |         |         |
  1+10       0.0429      0.05  O         |         |         |         |
  1+15       0.0465      0.05  OI        |         |         |         |
  1+20       0.0497      0.05  |O        |         |         |         |
  1+25       0.0526      0.06  |O        |         |         |         |
  1+30       0.0555      0.06  |O        |         |         |         |
  1+35       0.0582      0.06  |O        |         |         |         |
  1+40       0.0608      0.06  |O        |         |         |         |
  1+45       0.0634      0.07  |O        |         |         |         |
  1+50       0.0660      0.07  |O        |         |         |         |
  1+55       0.0688      0.07  |O        |         |         |         |
  2+ 0       0.0720      0.08  |O        |         |         |         |
  2+ 5       0.0755      0.08  |O        |         |         |         |
  2+10       0.0790      0.08  |O        |         |         |         |
  2+15       0.0825      0.09  |O        |         |         |         |
  2+20       0.0859      0.09  |O        |         |         |         |
  2+25       0.0892      0.09  |O        |         |         |         |
  2+30       0.0924      0.10  |OI       |         |         |         |
  2+35       0.0956      0.10  | O       |         |         |         |
  2+40       0.0990      0.10  | O       |         |         |         |
  2+45       0.1028      0.11  | O       |         |         |         |
  2+50       0.1066      0.11  | O       |         |         |         |
  2+55       0.1088      0.11  | O       |         |         |         |
  3+ 0       0.1086      0.11  | O       |         |         |         |
  3+ 5       0.1067      0.10  | O       |         |         |         |
  3+10       0.1043      0.10  | O       |         |         |         |
  3+15       0.1017      0.10  | O       |         |         |         |
  3+20       0.0991      0.10  | O       |         |         |         |
  3+25       0.0966      0.09  |IO       |         |         |         |
  3+30       0.0942      0.09  |O        |         |         |         |
  3+35       0.0919      0.09  |O        |         |         |         |
  3+40       0.0897      0.09  |O        |         |         |         |
  3+45       0.0876      0.09  |O        |         |         |         |
  3+50       0.0856      0.08  |O        |         |         |         |
  3+55       0.0841      0.08  |O        |         |         |         |
  4+ 0       0.0833      0.08  |O        |         |         |         |
  4+ 5       0.0830      0.08  |O        |         |         |         |
  4+10       0.0829      0.08  |O        |         |         |         |
  4+15       0.0829      0.08  |O        |         |         |         |
  4+20       0.0830      0.08  |O        |         |         |         |
  4+25       0.0835      0.08  |O        |         |         |         |
  4+30       0.0846      0.09  |O        |         |         |         |
  4+35       0.0862      0.09  |O        |         |         |         |
  4+40       0.0879      0.09  |O        |         |         |         |
  4+45       0.0897      0.09  |O        |         |         |         |
  4+50       0.0915      0.09  |O        |         |         |         |
  4+55       0.0937      0.10  |OI       |         |         |         |
  5+ 0       0.0965      0.10  | O       |         |         |         |
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 5+ 5       0.0995      0.10  | O       |         |         |         |
 5+10       0.1019      0.10  | O       |         |         |         |
 5+15       0.1031      0.10  | O       |         |         |         |
 5+20       0.1036      0.10  | O       |         |         |         |
 5+25       0.1041      0.11  | O       |         |         |         |
 5+30       0.1052      0.11  | O       |         |         |         |
 5+35       0.1066      0.11  | O       |         |         |         |
 5+40       0.1087      0.11  | O       |         |         |         |
 5+45       0.1113      0.11  | O       |         |         |         |
 5+50       0.1144      0.12  | O       |         |         |         |
 5+55       0.1175      0.12  | O       |         |         |         |
 6+ 0       0.1207      0.12  | O       |         |         |         |
 6+ 5       0.1239      0.13  | O       |         |         |         |
 6+10       0.1275      0.13  | O       |         |         |         |
 6+15       0.1316      0.14  | O       |         |         |         |
 6+20       0.1360      0.14  | O       |         |         |         |
 6+25       0.1405      0.15  | OI      |         |         |         |
 6+30       0.1450      0.15  |  O      |         |         |         |
 6+35       0.1494      0.15  |  O      |         |         |         |
 6+40       0.1542      0.16  |  O      |         |         |         |
 6+45       0.1595      0.17  |  O      |         |         |         |
 6+50       0.1651      0.17  |  O      |         |         |         |
 6+55       0.1707      0.18  |  O      |         |         |         |
 7+ 0       0.1762      0.18  |  O      |         |         |         |
 7+ 5       0.1817      0.19  |  O      |         |         |         |
 7+10       0.1871      0.19  |  OI     |         |         |         |
 7+15       0.1923      0.20  |   O     |         |         |         |
 7+20       0.1975      0.20  |   O     |         |         |         |
 7+25       0.2030      0.21  |   O     |         |         |         |
 7+30       0.2089      0.22  |   O     |         |         |         |
 7+35       0.2152      0.22  |   O     |         |         |         |
 7+40       0.2219      0.23  |   O     |         |         |         |
 7+45       0.2292      0.24  |   O     |         |         |         |
 7+50       0.2367      0.24  |   OI    |         |         |         |
 7+55       0.2447      0.25  |    O    |         |         |         |
 8+ 0       0.2531      0.26  |    O    |         |         |         |
 8+ 5       0.2619      0.27  |    O    |         |         |         |
 8+10       0.2714      0.28  |    O    |         |         |         |
 8+15       0.2820      0.29  |    OI   |         |         |         |
 8+20       0.2931      0.30  |     O   |         |         |         |
 8+25       0.3043      0.32  |     O   |         |         |         |
 8+30       0.3154      0.33  |     O   |         |         |         |
 8+35       0.3263      0.34  |     OI  |         |         |         |
 8+40       0.3373      0.35  |      O  |         |         |         |
 8+45       0.3487      0.36  |      O  |         |         |         |
 8+50       0.3602      0.37  |      O  |         |         |         |
 8+55       0.3720      0.38  |      OI |         |         |         |
 9+ 0       0.3835      0.39  |       O |         |         |         |
 9+ 5       0.3909      0.39  |       O |         |         |         |
 9+10       0.3926      0.39  |       O |         |         |         |
 9+15       0.3930      0.39  |       O |         |         |         |
 9+20       0.3930      0.39  |       O |         |         |         |
 9+25       0.3931      0.39  |       O |         |         |         |
 9+30       0.3931      0.39  |       O |         |         |         |
 9+35       0.3931      0.39  |       O |         |         |         |
 9+40       0.3931      0.39  |       O |         |         |         |
 9+45       0.3931      0.39  |       O |         |         |         |
 9+50       0.3931      0.39  |       O |         |         |         |
 9+55       0.3931      0.39  |       O |         |         |         |
10+ 0       0.3931      0.39  |       O |         |         |         |
10+ 5       0.3931      0.39  |       O |         |         |         |
10+10       0.3931      0.39  |       O |         |         |         |
10+15       0.3931      0.39  |       O |         |         |         |
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10+20       0.3931      0.39  |       O |         |         |         |
10+25       0.3931      0.39  |       O |         |         |         |
10+30       0.3931      0.39  |       O |         |         |         |
10+35       0.3931      0.39  |       O |         |         |         |
10+40       0.3931      0.39  |       O |         |         |         |
10+45       0.3931      0.39  |       O |         |         |         |
10+50       0.3931      0.39  |       O |         |         |         |
10+55       0.3931      0.39  |       O |         |         |         |
11+ 0       0.3931      0.39  |       O |         |         |         |
11+ 5       0.3931      0.39  |       O |         |         |         |
11+10       0.3931      0.39  |       O |         |         |         |
11+15       0.3931      0.39  |       O |         |         |         |
11+20       0.3931      0.39  |       O |         |         |         |
11+25       0.3931      0.39  |       O |         |         |         |
11+30       0.3931      0.39  |       O |         |         |         |
11+35       0.3931      0.39  |       O |         |         |         |
11+40       0.3931      0.39  |       O |         |         |         |
11+45       0.3931      0.39  |       O |         |         |         |
11+50       0.3931      0.39  |       O |         |         |         |
11+55       0.3931      0.39  |       O |         |         |         |
12+ 0       0.3931      0.39  |       O |         |         |         |
12+ 5       0.3931      0.39  |       O |         |         |         |
12+10       0.3931      0.39  |       O |         |         |         |
12+15       0.3931      0.39  |       O |         |         |         |
12+20       0.4469      0.66  |        O|  I      |         |         |
12+25       0.6630      0.91  |         |  O     I|         |         |
12+30       0.8903      1.08  |         |       O | I       |         |
12+35       1.0679      1.21  |         |         | O  I    |         |
12+40       1.2029      1.32  |         |         |    O I  |         |
12+45       1.3104      1.40  |         |         |      O I|         |
12+50       1.3946      1.47  |         |         |        OI         |
12+55       1.4603      1.52  |         |         |         OI        |
13+ 0       1.5137      1.56  |         |         |         |OI       |
13+ 5       1.5599      1.61  |         |         |         | OI      |
13+10       1.6159      1.69  |         |         |         |  O I    |
13+15       1.6907      1.77  |         |         |         |    O I  |
13+20       1.7665      1.83  |         |         |         |      OI |
13+25       1.8279      1.88  |         |         |         |       OI|
13+30       1.8734      1.91  |         |         |         |        OI
13+35       1.8960      1.88  |         |         |         |        O|
13+40       1.8626      1.77  |         |         |         |      I O|
13+45       1.7615      1.63  |         |         |         |   I O   |
13+50       1.6389      1.53  |         |         |         |I  O     |
13+55       1.5349      1.45  |         |         |         I O       |
14+ 0       1.4568      1.40  |         |         |        IO         |
14+ 5       1.4051      1.38  |         |         |       IO|         |
14+10       1.3878      1.40  |         |         |        O|         |
14+15       1.4049      1.44  |         |         |        OI         |
14+20       1.4357      1.46  |         |         |         O         |
14+25       1.4600      1.48  |         |         |         O         |
14+30       1.4725      1.48  |         |         |         O         |
14+35       1.4773      1.48  |         |         |         O         |
14+40       1.4790      1.48  |         |         |         OI        |
14+45       1.4798      1.48  |         |         |         |O        |
14+50       1.4795      1.48  |         |         |         O         |
14+55       1.4750      1.47  |         |         |         O         |
15+ 0       1.4651      1.45  |         |         |         O         |
15+ 5       1.4528      1.44  |         |         |         O         |
15+10       1.4383      1.42  |         |         |        IO         |
15+15       1.4209      1.40  |         |         |        O|         |
15+20       1.4033      1.39  |         |         |        O|         |
15+25       1.3852      1.36  |         |         |       IO|         |
15+30       1.3653      1.35  |         |         |       O |         |
```

```
15+35       1.3434      1.31  |         |         |      IO |         |
15+40       1.3089      1.26  |         |         |     IO  |         |
15+45       1.2565      1.20  |         |         |    IO   |         |
15+50       1.2012      1.15  |         |         |   IO    |         |
15+55       1.1562      1.12  |         |         |  IO     |         |
16+ 0       1.1231      1.10  |         |         | IO      |         |
16+ 5       1.0868      1.02  |         |         |IO       |         |
16+10       0.9952      0.83  |         |      I  O         |         |
16+15       0.8260      0.62  |         |  I   O  |         |         |
16+20       0.6374      0.47  |        I|  O      |         |         |
16+25       0.4893      0.39  |       I O         |         |         |
16+30       0.4144      0.39  |       O |         |         |         |
16+35       0.3978      0.39  |       O |         |         |         |
16+40       0.3941      0.39  |       O |         |         |         |
16+45       0.3933      0.39  |       O |         |         |         |
16+50       0.3931      0.39  |       O |         |         |         |
16+55       0.3931      0.39  |       O |         |         |         |
17+ 0       0.3931      0.39  |       O |         |         |         |
17+ 5       0.3931      0.39  |       O |         |         |         |
17+10       0.3931      0.39  |       O |         |         |         |
17+15       0.3931      0.39  |       O |         |         |         |
17+20       0.3931      0.39  |       O |         |         |         |
17+25       0.3931      0.39  |       O |         |         |         |
17+30       0.3931      0.39  |       O |         |         |         |
17+35       0.3931      0.39  |       O |         |         |         |
17+40       0.3931      0.39  |       O |         |         |         |
17+45       0.3931      0.39  |       O |         |         |         |
17+50       0.3931      0.39  |       O |         |         |         |
17+55       0.3931      0.39  |       O |         |         |         |
18+ 0       0.3931      0.39  |       O |         |         |         |
18+ 5       0.3931      0.39  |       O |         |         |         |
18+10       0.3931      0.39  |       O |         |         |         |
18+15       0.3931      0.39  |       O |         |         |         |
18+20       0.3931      0.39  |       O |         |         |         |
18+25       0.3931      0.39  |       O |         |         |         |
18+30       0.3931      0.39  |       O |         |         |         |
18+35       0.3931      0.39  |       O |         |         |         |
18+40       0.3931      0.39  |       O |         |         |         |
18+45       0.3931      0.39  |       O |         |         |         |
18+50       0.3931      0.39  |       O |         |         |         |
18+55       0.3931      0.39  |       O |         |         |         |
19+ 0       0.3931      0.39  |       O |         |         |         |
19+ 5       0.3931      0.39  |       O |         |         |         |
19+10       0.3931      0.39  |       O |         |         |         |
19+15       0.3931      0.39  |       O |         |         |         |
19+20       0.3931      0.39  |       O |         |         |         |
19+25       0.3931      0.39  |       O |         |         |         |
19+30       0.3931      0.39  |       O |         |         |         |
19+35       0.3931      0.39  |       O |         |         |         |
19+40       0.3931      0.39  |       O |         |         |         |
19+45       0.3931      0.39  |       O |         |         |         |
19+50       0.3931      0.39  |       O |         |         |         |
19+55       0.3931      0.39  |       O |         |         |         |
20+ 0       0.3931      0.39  |       O |         |         |         |
20+ 5       0.3931      0.39  |       O |         |         |         |
20+10       0.3931      0.39  |       O |         |         |         |
20+15       0.3931      0.39  |       O |         |         |         |
20+20       0.3931      0.39  |       O |         |         |         |
20+25       0.3931      0.39  |       O |         |         |         |
20+30       0.3931      0.39  |       O |         |         |         |
20+35       0.3931      0.39  |       O |         |         |         |
20+40       0.3931      0.39  |       O |         |         |         |
20+45       0.3931      0.39  |       O |         |         |         |
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20+50       0.3931      0.39  |       O |         |         |         |
20+55       0.3931      0.39  |       O |         |         |         |
21+ 0       0.3931      0.39  |       O |         |         |         |
21+ 5       0.3931      0.39  |       O |         |         |         |
21+10       0.3931      0.39  |       O |         |         |         |
21+15       0.3931      0.39  |       O |         |         |         |
21+20       0.3931      0.39  |       O |         |         |         |
21+25       0.3931      0.39  |       O |         |         |         |
21+30       0.3931      0.39  |       O |         |         |         |
21+35       0.3931      0.39  |       O |         |         |         |
21+40       0.3931      0.39  |       O |         |         |         |
21+45       0.3931      0.39  |       O |         |         |         |
21+50       0.3931      0.39  |       O |         |         |         |
21+55       0.3931      0.39  |       O |         |         |         |
22+ 0       0.3931      0.39  |       O |         |         |         |
22+ 5       0.3931      0.39  |       O |         |         |         |
22+10       0.3931      0.39  |       O |         |         |         |
22+15       0.3931      0.39  |       O |         |         |         |
22+20       0.3931      0.39  |       O |         |         |         |
22+25       0.3931      0.39  |       O |         |         |         |
22+30       0.3931      0.39  |       O |         |         |         |
22+35       0.3931      0.39  |       O |         |         |         |
22+40       0.3928      0.39  |       O |         |         |         |
22+45       0.3899      0.38  |      IO |         |         |         |
22+50       0.3815      0.37  |      O  |         |         |         |
22+55       0.3721      0.36  |      O  |         |         |         |
23+ 0       0.3626      0.35  |      O  |         |         |         |
23+ 5       0.3534      0.34  |      O  |         |         |         |
23+10       0.3444      0.34  |      O  |         |         |         |
23+15       0.3356      0.33  |     IO  |         |         |         |
23+20       0.3271      0.32  |     O   |         |         |         |
23+25       0.3188      0.31  |     O   |         |         |         |
23+30       0.3108      0.30  |     O   |         |         |         |
23+35       0.3030      0.30  |     O   |         |         |         |
23+40       0.2954      0.29  |     O   |         |         |         |
23+45       0.2880      0.28  |    IO   |         |         |         |
23+50       0.2808      0.27  |    O    |         |         |         |
23+55       0.2739      0.27  |    O    |         |         |         |
24+ 0       0.2671      0.26  |    O    |         |         |         |
24+ 5       0.2604      0.25  |    O    |         |         |         |
24+10       0.2539      0.25  |    O    |         |         |         |
24+15       0.2472      0.24  |    O    |         |         |         |
24+20       0.2406      0.23  |   IO    |         |         |         |
24+25       0.2340      0.23  |   O     |         |         |         |
24+30       0.2277      0.22  |   O     |         |         |         |
24+35       0.2215      0.22  |   O     |         |         |         |
24+40       0.2154      0.21  |   O     |         |         |         |
24+45       0.2096      0.20  |   O     |         |         |         |
24+50       0.2039      0.20  |   O     |         |         |         |
24+55       0.1983      0.19  |   O     |         |         |         |
25+ 0       0.1929      0.19  |  IO     |         |         |         |
25+ 5       0.1876      0.18  |  O      |         |         |         |
25+10       0.1825      0.18  |  O      |         |         |         |
25+15       0.1776      0.17  |  O      |         |         |         |
25+20       0.1727      0.17  |  O      |         |         |         |
25+25       0.1680      0.16  |  O      |         |         |         |
25+30       0.1634      0.16  |  O      |         |         |         |
25+35       0.1590      0.15  |  O      |         |         |         |
25+40       0.1547      0.15  |  O      |         |         |         |
25+45       0.1504      0.15  |  O      |         |         |         |
25+50       0.1463      0.14  | IO      |         |         |         |
25+55       0.1424      0.14  | O       |         |         |         |
26+ 0       0.1385      0.13  | O       |         |         |         |
```

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 26+ 5       0.1347      0.13  | O       |         |         |         |
 26+10       0.1310      0.13  | O       |         |         |         |
 26+15       0.1275      0.12  | O       |         |         |         |
 26+20       0.1240      0.12  | O       |         |         |         |
 26+25       0.1206      0.12  | O       |         |         |         |
 26+30       0.1173      0.11  | O       |         |         |         |
 26+35       0.1141      0.11  | O       |         |         |         |
 26+40       0.1110      0.11  | O       |         |         |         |
 26+45       0.1080      0.10  | O       |         |         |         |
 26+50       0.1051      0.10  | O       |         |         |         |
 26+55       0.1022      0.10  | O       |         |         |         |
 27+ 0       0.0799      0.00  IO        |         |         |         |
 27+ 5       0.0177      0.00  O         |         |         |         |
 27+10       0.0039      0.00  O         |         |         |         |
 27+15       0.0000      0.00  O         |         |         |         |
---------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   327
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        1.896 (CFS)
                   Total volume =       0.947 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ---------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      502.000 to Point/Station      602.000
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      _____________________________________________________________________
      Current stream hydrograph saved in file 27259EPOND1024.rte
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =     0
                   Time interval =    0.0 (Min.)
                   Maximum/Peak flow rate =        0.000 (CFS)
                   Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      **********************************************************************

      ---------------------------------------------------------------------
```

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
Study date: 01/31/18

PM #13523
MILL CREEK PROMENADE
AREA F (Pond F)- Q10yr1hr(ONSITE)- Unit Hydrograph Method

Program License Serial Number 4066

********** HYDROGRAPH INFORMATION **********

From study/file name: 27259UHF1110.rte
**********HYDROGRAPH DATA**********
Number of intervals = 15
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.199 (CFS)
Total volume = 0.239 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 602.000 to Point/Station 603.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

********** HYDROGRAPH INFORMATION **********

From study/file name: 27259UHF2110.rte
++
P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0 3.0 6.0 9.0 12.0
0+ 5	0.3596	0.84	qQ
0+10	0.7652	1.92	q Q
0+15	0.9182	2.37	q Q
0+20	0.9875	2.58	q Q
0+25	1.1084	2.90	q Q
0+30	1.1859	3.12	q Q
0+35	1.3543	3.53	q Q
0+40	1.6564	4.30	q Q
0+45	2.3698	6.05	q Q
0+50	4.8286	12.03	q Q
0+55	3.5488	9.87	q Q
1+ 0	1.4782	4.29	q Q
1+ 5	0.4020	1.60	q Q
1+10	0.0522	0.27	Q
1+15	0.0000	0.05	Q

```
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    15
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =       12.028 (CFS)
                  Total volume =       0.384 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.000 to Point/Station      603.000
      **** RETARDING BASIN ROUTING ****
      _____________________________________________________________________

      Program computation of outflow v. depth




      CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

      Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
      flow capacity is being calculated using depth = diameter
      Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

      Total outflow at this depth =      0.39(CFS)


      CALCULATED OUTFLOW DATA AT DEPTH =    2.50(Ft.))

      Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
      flow capacity is being calculated using depth = diameter
      Depth above pipe =   2.50(Ft.)    Capacity =   0.39(CFS)

      Total outflow at this depth =      0.39(CFS)


      CALCULATED OUTFLOW DATA AT DEPTH =    3.50(Ft.))

      Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
      flow capacity is being calculated using depth = diameter
      Depth above pipe =   3.50(Ft.)    Capacity =   0.39(CFS)


      Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

      Total outflow at this depth =     10.39(CFS)
```

```
CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     14.53(CFS)

-------------------------------------------------------------------
Total number of inflow hydrograph intervals = 15
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
-------------------------------------------------------------------
-------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
-------------------------------------------------------------------
-------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
-------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.103      0.393      0.102        0.104
   2.500      0.219      0.393      0.218        0.220
   3.500      0.382     10.390      0.346        0.418
   4.000      0.460     14.530      0.410        0.510
-------------------------------------------------------------------
             Hydrograph Detention Basin Routing
-------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                   Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       3.0    6.01    9.02   12.03 (Ft.)
 0.083    0.84    0.01      0.003  O I     |       |       |       |     0.03
 0.167    1.92    0.05      0.012  O    I  |       |       |       |     0.12
 0.250    2.37    0.10      0.026  O     I |       |       |       |     0.26
 0.333    2.58    0.16      0.043  O     I |       |       |       |     0.41
 0.417    2.90    0.23      0.060  O      I|       |       |       |     0.58
 0.500    3.12    0.30      0.079  O       I       |       |       |     0.77
 0.583    3.53    0.38      0.100  |O      |I      |       |       |     0.97
 0.667    4.30    0.39      0.124  |O      |  I    |       |       |     1.27
 0.750    6.05    0.39      0.157  |O      |       I       |       |     1.70
 0.833   12.03    0.39      0.216  |O      |       |       |       I     2.47
 0.917    9.87    3.94      0.277  |       | O     |       | I     |     2.85
 1.000    4.29    5.04      0.295  |       |  I O  |       |       |     2.96
 1.083    1.60    4.31      0.283  |   I   |  O    |       |       |     2.89
 1.167    0.27    3.13      0.264  I       O       |       |       |     2.77
 1.250    0.05    2.09      0.247  I    O  |       |       |       |     2.67
 1.333    0.00    1.37      0.235  I  O    |       |       |       |     2.60
 1.417    0.00    0.89      0.227  I O     |       |       |       |     2.55
 1.500    0.00    0.58      0.222  IO      |       |       |       |     2.52
 1.583    0.00    0.39      0.219  IO      |       |       |       |     2.50
```

1.667	0.00	0.39	0.216	IO					2.46
1.750	0.00	0.39	0.213	IO					2.43
1.833	0.00	0.39	0.211	IO					2.39
1.917	0.00	0.39	0.208	IO					2.36
2.000	0.00	0.39	0.205	IO					2.32
2.083	0.00	0.39	0.202	IO					2.29
2.167	0.00	0.39	0.200	IO					2.25
2.250	0.00	0.39	0.197	IO					2.22
2.333	0.00	0.39	0.194	IO					2.18
2.417	0.00	0.39	0.192	IO					2.15
2.500	0.00	0.39	0.189	IO					2.11
2.583	0.00	0.39	0.186	IO					2.08
2.667	0.00	0.39	0.184	IO					2.04
2.750	0.00	0.39	0.181	IO					2.01
2.833	0.00	0.39	0.178	IO					1.97
2.917	0.00	0.39	0.175	IO					1.94
3.000	0.00	0.39	0.173	IO					1.90
3.083	0.00	0.39	0.170	IO					1.87
3.167	0.00	0.39	0.167	IO					1.83
3.250	0.00	0.39	0.165	IO					1.80
3.333	0.00	0.39	0.162	IO					1.76
3.417	0.00	0.39	0.159	IO					1.73
3.500	0.00	0.39	0.156	IO					1.69
3.583	0.00	0.39	0.154	IO					1.66
3.667	0.00	0.39	0.151	IO					1.62
3.750	0.00	0.39	0.148	IO					1.59
3.833	0.00	0.39	0.146	IO					1.55
3.917	0.00	0.39	0.143	IO					1.52
4.000	0.00	0.39	0.140	IO					1.48
4.083	0.00	0.39	0.138	IO					1.45
4.167	0.00	0.39	0.135	IO					1.41
4.250	0.00	0.39	0.132	IO					1.38
4.333	0.00	0.39	0.129	IO					1.34
4.417	0.00	0.39	0.127	IO					1.31
4.500	0.00	0.39	0.124	IO					1.27
4.583	0.00	0.39	0.121	IO					1.24
4.667	0.00	0.39	0.119	IO					1.20
4.750	0.00	0.39	0.116	IO					1.17
4.833	0.00	0.39	0.113	IO					1.13
4.917	0.00	0.39	0.110	IO					1.10
5.000	0.00	0.39	0.108	IO					1.06
5.083	0.00	0.39	0.105	IO					1.03
5.167	0.00	0.39	0.102	IO					0.99
5.250	0.00	0.38	0.100	IO					0.97
5.333	0.00	0.37	0.097	O					0.94
5.417	0.00	0.36	0.095	O					0.92
5.500	0.00	0.35	0.092	O					0.89
5.583	0.00	0.34	0.090	O					0.87
5.667	0.00	0.33	0.087	O					0.85
5.750	0.00	0.32	0.085	O					0.83
5.833	0.00	0.32	0.083	O					0.81
5.917	0.00	0.31	0.081	O					0.78
6.000	0.00	0.30	0.079	O					0.76
6.083	0.00	0.29	0.077	O					0.74
6.167	0.00	0.28	0.075	O					0.72
6.250	0.00	0.28	0.073	O					0.71
6.333	0.00	0.27	0.071	O					0.69
6.417	0.00	0.26	0.069	O					0.67
6.500	0.00	0.26	0.067	O					0.65
6.583	0.00	0.25	0.065	O					0.64
6.667	0.00	0.24	0.064	O					0.62
6.750	0.00	0.24	0.062	O					0.60
6.833	0.00	0.23	0.060	O					0.59

```
6.917    0.00    0.22      0.059  O       |       |       |       |     0.57
7.000    0.00    0.22      0.057  O       |       |       |       |     0.56
7.083    0.00    0.21      0.056  O       |       |       |       |     0.54
7.167    0.00    0.21      0.054  O       |       |       |       |     0.53
7.250    0.00    0.20      0.053  O       |       |       |       |     0.52
7.333    0.00    0.20      0.052  O       |       |       |       |     0.50
7.417    0.00    0.19      0.050  O       |       |       |       |     0.49
7.500    0.00    0.19      0.049  O       |       |       |       |     0.48
7.583    0.00    0.18      0.048  O       |       |       |       |     0.46
7.667    0.00    0.18      0.047  O       |       |       |       |     0.45
7.750    0.00    0.17      0.045  O       |       |       |       |     0.44
7.833    0.00    0.17      0.044  O       |       |       |       |     0.43
7.917    0.00    0.16      0.043  O       |       |       |       |     0.42
8.000    0.00    0.16      0.042  O       |       |       |       |     0.41
8.083    0.00    0.16      0.041  O       |       |       |       |     0.40
8.167    0.00    0.15      0.040  O       |       |       |       |     0.39
8.250    0.00    0.15      0.039  O       |       |       |       |     0.38
8.333    0.00    0.14      0.038  O       |       |       |       |     0.37
8.417    0.00    0.14      0.037  O       |       |       |       |     0.36
8.500    0.00    0.14      0.036  O       |       |       |       |     0.35
8.583    0.00    0.13      0.035  O       |       |       |       |     0.34
8.667    0.00    0.13      0.034  O       |       |       |       |     0.33
8.750    0.00    0.13      0.033  O       |       |       |       |     0.32
8.833    0.00    0.12      0.032  O       |       |       |       |     0.31
8.917    0.00    0.12      0.031  O       |       |       |       |     0.30
9.000    0.00    0.12      0.031  O       |       |       |       |     0.30
9.083    0.00    0.11      0.030  O       |       |       |       |     0.29
9.167    0.00    0.11      0.029  O       |       |       |       |     0.28
9.250    0.00    0.11      0.028  O       |       |       |       |     0.27
9.333    0.00    0.10      0.027  O       |       |       |       |     0.27
9.417    0.00    0.10      0.027  O       |       |       |       |     0.26
9.500    0.00    0.10      0.026  O       |       |       |       |     0.25

     Remaining water in basin =    0.03 (Ac.Ft)

     ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   114
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        5.037 (CFS)
                  Total volume =       0.358 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
     ***********************************************************************

     ----------------------------------------------------------------------


     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
     Process from Point/Station      603.100 to Point/Station      603.200
     **** STREAM ROUTING SCS CONVEX METHOD ****
     ______________________________________________________________________
     HYDROGRAPH STREAM ROUTING DATA:
     Length of stream =    210.00 (Ft.)
     Elevation difference =    1.05 (Ft.)
     Slope of channel =  0.005000 (Vert/Horiz)
     Channel type - Pipe


     Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
```

```
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow  =     1.345(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.345(CFS)
Normal flow depth in pipe =    6.23(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =    0.49(Ft.)
Pipe flow velocity =      3.26(Ft/s)
Travel time through pipe =    1.07 min.


Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     5.037(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.037(CFS)
Normal flow depth in pipe =   10.86(In.)
Flow top width inside pipe =   17.61(In.)
Critical Depth =    0.86(Ft.)
Pipe flow velocity =      4.52(Ft/s)
Travel time through pipe =    0.77 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7265   Travel time =   0.77 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   6.2537
       dt(routing time-step) =   0.56 (min.),   c* =   0.9997

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T   O F   S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.3       2.5       3.8       5.0
----------------------------------------------------------------------
  0+ 5       0.0096      0.01  O         |         |         |         |
  0+10       0.0423      0.05  O         |         |         |         |
  0+15       0.0945      0.10  O         |         |         |         |
  0+20       0.1553      0.16  |O        |         |         |         |
  0+25       0.2216      0.23  |O        |         |         |         |
  0+30       0.2932      0.30  | O       |         |         |         |
  0+35       0.3710      0.38  | OI      |         |         |         |
  0+40       0.3916      0.39  |  O      |         |         |         |
  0+45       0.3931      0.39  |  O      |         |         |         |
  0+50       0.3931      0.39  |  O      |         |         |         |
  0+55       3.5405      3.94  |         |         |       O |I        |
  1+ 0       4.9129      5.04  |         |         |         |        OI
  1+ 5       4.3902      4.31  |         |         |         |   O     |
  1+10       3.2644      3.13  |         |         |   IO    |         |
  1+15       2.2118      2.09  |         |     IO  |         |         |
  1+20       1.4546      1.37  |         IO        |         |         |
  1+25       0.9483      0.89  |      O  |         |         |         |
```

1+30	0.6176	0.58	| O	|	|	|	|
1+35	0.4144	0.39	| O	|	|	|	|
1+40	0.3931	0.39	| O	|	|	|	|
1+45	0.3931	0.39	| O	|	|	|	|
1+50	0.3931	0.39	| O	|	|	|	|
1+55	0.3931	0.39	| O	|	|	|	|
2+ 0	0.3931	0.39	| O	|	|	|	|
2+ 5	0.3931	0.39	| O	|	|	|	|
2+10	0.3931	0.39	| O	|	|	|	|
2+15	0.3931	0.39	| O	|	|	|	|
2+20	0.3931	0.39	| O	|	|	|	|
2+25	0.3931	0.39	| O	|	|	|	|
2+30	0.3931	0.39	| O	|	|	|	|
2+35	0.3931	0.39	| O	|	|	|	|
2+40	0.3931	0.39	| O	|	|	|	|
2+45	0.3931	0.39	| O	|	|	|	|
2+50	0.3931	0.39	| O	|	|	|	|
2+55	0.3931	0.39	| O	|	|	|	|
3+ 0	0.3931	0.39	| O	|	|	|	|
3+ 5	0.3931	0.39	| O	|	|	|	|
3+10	0.3931	0.39	| O	|	|	|	|
3+15	0.3931	0.39	| O	|	|	|	|
3+20	0.3931	0.39	| O	|	|	|	|
3+25	0.3931	0.39	| O	|	|	|	|
3+30	0.3931	0.39	| O	|	|	|	|
3+35	0.3931	0.39	| O	|	|	|	|
3+40	0.3931	0.39	| O	|	|	|	|
3+45	0.3931	0.39	| O	|	|	|	|
3+50	0.3931	0.39	| O	|	|	|	|
3+55	0.3931	0.39	| O	|	|	|	|
4+ 0	0.3931	0.39	| O	|	|	|	|
4+ 5	0.3931	0.39	| O	|	|	|	|
4+10	0.3931	0.39	| O	|	|	|	|
4+15	0.3931	0.39	| O	|	|	|	|
4+20	0.3931	0.39	| O	|	|	|	|
4+25	0.3931	0.39	| O	|	|	|	|
4+30	0.3931	0.39	| O	|	|	|	|
4+35	0.3931	0.39	| O	|	|	|	|
4+40	0.3931	0.39	| O	|	|	|	|
4+45	0.3931	0.39	| O	|	|	|	|
4+50	0.3931	0.39	| O	|	|	|	|
4+55	0.3931	0.39	| O	|	|	|	|
5+ 0	0.3931	0.39	| O	|	|	|	|
5+ 5	0.3931	0.39	| O	|	|	|	|
5+10	0.3908	0.39	| O	|	|	|	|
5+15	0.3815	0.38	| O	|	|	|	|
5+20	0.3716	0.37	| O	|	|	|	|
5+25	0.3620	0.36	| O	|	|	|	|
5+30	0.3526	0.35	| O	|	|	|	|
5+35	0.3435	0.34	| O	|	|	|	|
5+40	0.3345	0.33	| O	|	|	|	|
5+45	0.3259	0.32	| O	|	|	|	|
5+50	0.3174	0.32	| O	|	|	|	|
5+55	0.3092	0.31	| O	|	|	|	|
6+ 0	0.3012	0.30	| O	|	|	|	|
6+ 5	0.2933	0.29	| O	|	|	|	|
6+10	0.2857	0.28	| O	|	|	|	|
6+15	0.2783	0.28	| O	|	|	|	|
6+20	0.2711	0.27	| O	|	|	|	|
6+25	0.2641	0.26	| O	|	|	|	|
6+30	0.2572	0.26	| O	|	|	|	|
6+35	0.2506	0.25	|O	|	|	|	|
6+40	0.2441	0.24	|O	|	|	|	|

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   6+45       0.2377      0.24  |O        |         |         |         |
   6+50       0.2316      0.23  |O        |         |         |         |
   6+55       0.2255      0.22  |O        |         |         |         |
   7+ 0       0.2197      0.22  |O        |         |         |         |
   7+ 5       0.2140      0.21  |O        |         |         |         |
   7+10       0.2084      0.21  |O        |         |         |         |
   7+15       0.2030      0.20  |O        |         |         |         |
   7+20       0.1978      0.20  |O        |         |         |         |
   7+25       0.1926      0.19  |O        |         |         |         |
   7+30       0.1876      0.19  |O        |         |         |         |
   7+35       0.1828      0.18  |O        |         |         |         |
   7+40       0.1780      0.18  |O        |         |         |         |
   7+45       0.1734      0.17  |O        |         |         |         |
   7+50       0.1689      0.17  |O        |         |         |         |
   7+55       0.1645      0.16  |O        |         |         |         |
   8+ 0       0.1603      0.16  |O        |         |         |         |
   8+ 5       0.1561      0.16  |O        |         |         |         |
   8+10       0.1521      0.15  |O        |         |         |         |
   8+15       0.1481      0.15  |O        |         |         |         |
   8+20       0.1443      0.14  |O        |         |         |         |
   8+25       0.1405      0.14  |O        |         |         |         |
   8+30       0.1369      0.14  |O        |         |         |         |
   8+35       0.1333      0.13  |O        |         |         |         |
   8+40       0.1299      0.13  |O        |         |         |         |
   8+45       0.1265      0.13  |O        |         |         |         |
   8+50       0.1232      0.12  O         |         |         |         |
   8+55       0.1200      0.12  O         |         |         |         |
   9+ 0       0.1169      0.12  O         |         |         |         |
   9+ 5       0.1139      0.11  O         |         |         |         |
   9+10       0.1109      0.11  O         |         |         |         |
   9+15       0.1080      0.11  O         |         |         |         |
   9+20       0.1052      0.10  O         |         |         |         |
   9+25       0.1025      0.10  O         |         |         |         |
   9+30       0.0999      0.10  O         |         |         |         |
   9+35       0.0112      0.00  O         |         |         |         |
   9+40       0.0000      0.00  O         |         |         |         |
-------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =   116
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        4.913 (CFS)
                 Total volume =       0.358 (Ac.Ft)
           Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      *************************************************************************

      ------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.200 to Point/Station      603.200
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259FPOND101.rte
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =     0
                 Time interval =    0.0 (Min.)
                 Maximum/Peak flow rate =        0.000 (CFS)
                 Total volume =       0.000 (Ac.Ft)
           Status of hydrographs being held in storage
                      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
```

```
       Peak (CFS)       0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*********************************************************************

---------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
             Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                         Study date: 01/31/18

     ---------------------------------------------------------------------
     PM #13523
     MILL CREEK PROMENADE
     AREA F (Pond F)- Q10yr3hr(ONSITE)- Unit Hydrograph Method
     ---------------------------------------------------------------------


     Program License Serial Number 4066

     ---------------------------------------------------------------------
     ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: 27259UHF1310.rte
     ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    39
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        4.122 (CFS)
                  Total volume =       0.348 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
     **********************************************************************



     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
     Process from Point/Station      602.000 to Point/Station      603.000
     **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
     ______________________________________________________________________
     ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: 27259UHF2310.rte
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                       P R I N T   O F   S T O R M
                        R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals (CFS)

     ---------------------------------------------------------------------
Time(h+m) Add q(CFS)  Tot. Q   0        1.7       3.4       5.0       6.7
-----------------------------------------------------------------------
  0+ 5       0.1874      0.44  |qQ       |         |         |         |
  0+10       0.3143      0.80  |q  Q     |         |         |         |
  0+15       0.2982      0.78  |q  Q     |         |         |         |
  0+20       0.3493      0.91  | q  Q    |         |         |         |
  0+25       0.3971      1.04  | q   Q   |         |         |         |
  0+30       0.4643      1.20  | q    Q  |         |         |         |
  0+35       0.4456      1.19  | q    Q  |         |         |         |
  0+40       0.4713      1.23  | q    Q  |         |         |         |
  0+45       0.5036      1.33  |  q   Q  |         |         |         |
  0+50       0.4526      1.21  | q    Q  |         |         |         |
  0+55       0.4327      1.15  | q   Q   |         |         |         |
  1+ 0       0.4774      1.26  | q    Q  |         |         |         |
  1+ 5       0.5832      1.51  |  q     Q|         |         |         |
  1+10       0.6403      1.68  |  q      Q         |         |         |
  1+15       0.6496      1.71  |  q      Q         |         |         |
```

```
    1+20       0.6109      1.63  |  q     Q|         |         |         |
    1+25       0.7007      1.83  |   q     Q         |         |         |
    1+30       0.7939      2.08  |   q     | Q       |         |         |
    1+35       0.7630      2.03  |   q     | Q       |         |         |
    1+40       0.7840      2.07  |   q     | Q       |         |         |
    1+45       0.9323      2.43  |    q    |   Q     |         |         |
    1+50       0.9792      2.58  |    q    |    Q    |         |         |
    1+55       0.9283      2.47  |    q    |   Q     |         |         |
    2+ 0       0.9168      2.44  |    q    |   Q     |         |         |
    2+ 5       0.9446      2.50  |    q    |   Q     |         |         |
    2+10       1.1725      3.04  |     q   |       Q |         |         |
    2+15       1.4735      3.82  |       q |         | Q       |         |
    2+20       1.3140      3.53  |      q  |         |Q        |         |
    2+25       1.7739      4.53  |         q         |      Q  |         |
    2+30       2.2678      5.91  |         |  q      |         |    Q    |
    2+35       2.5839      6.71  |         |    q    |         |         Q
    2+40       2.2690      6.12  |         |  q      |         |     Q   |
    2+45       1.2350      3.57  |      q  |         |Q        |         |
    2+50       0.6321      1.87  |  q      |Q        |         |         |
    2+55       0.5152      1.46  |  q    Q |         |         |         |
    3+ 0       0.2787      0.82  |q  Q     |         |         |         |
    3+ 5       0.0695      0.24  qQ        |         |         |         |
    3+10       0.0063      0.05  Q         |         |         |         |
    3+15       0.0000      0.01  Q         |         |         |         |
---------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    39
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        6.706 (CFS)
                  Total volume =       0.559 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.000 to Point/Station      603.000
      **** RETARDING BASIN ROUTING ****
      ______________________________________________________________________

      Program computation of outflow v. depth

      CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

      Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
      flow capacity is being calculated using depth = diameter
      Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

      Total outflow at this depth =      0.39(CFS)


      CALCULATED OUTFLOW DATA AT DEPTH =    2.50(Ft.))

      Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
      flow capacity is being calculated using depth = diameter
      Depth above pipe =   2.50(Ft.)    Capacity =   0.39(CFS)

      Total outflow at this depth =      0.39(CFS)
```

CALCULATED OUTFLOW DATA AT DEPTH = 3.50(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 3.50(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 0.50(Ft.) Capacity = 10.00(CFS)

Total outflow at this depth = 10.39(CFS)

CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.))

Free outlet pipe flow: Pipe Diameter = 0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of 0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe = 4.00(Ft.) Capacity = 0.39(CFS)

Free outlet pipe flow: Pipe Diameter = 1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe = 1.00(Ft.) Capacity = 14.14(CFS)

Total outflow at this depth = 14.53(CFS)

Total number of inflow hydrograph intervals = 39
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.103	0.393	0.102	0.104
2.500	0.219	0.393	0.218	0.220
3.500	0.382	10.390	0.346	0.418
4.000	0.460	14.530	0.410	0.510

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.7 3.35 5.03 6.71	Depth (Ft.)
0.083	0.44	0.01	0.001	O I | | | |	0.01
0.167	0.80	0.02	0.006	O I | | | |	0.05
0.250	0.78	0.04	0.011	O I | | | |	0.11

0.333	0.91	0.06	0.016	0.16
0.417	1.04	0.09	0.023	0.22
0.500	1.20	0.11	0.030	0.29
0.583	1.19	0.14	0.037	0.36
0.667	1.23	0.17	0.044	0.43
0.750	1.33	0.20	0.052	0.50
0.833	1.21	0.23	0.059	0.57
0.917	1.15	0.25	0.066	0.64
1.000	1.26	0.28	0.072	0.70
1.083	1.51	0.30	0.080	0.77
1.167	1.68	0.34	0.088	0.86
1.250	1.71	0.37	0.098	0.95
1.333	1.63	0.39	0.107	1.05
1.417	1.83	0.39	0.116	1.17
1.500	2.08	0.39	0.127	1.30
1.583	2.03	0.39	0.138	1.45
1.667	2.07	0.39	0.149	1.60
1.750	2.43	0.39	0.162	1.77
1.833	2.58	0.39	0.177	1.95
1.917	2.47	0.39	0.191	2.14
2.000	2.44	0.39	0.206	2.33
2.083	2.50	0.44	0.220	2.50
2.167	3.04	1.25	0.233	2.59
2.250	3.82	2.01	0.245	2.66
2.333	3.53	2.59	0.255	2.72
2.417	4.53	3.09	0.263	2.77
2.500	5.91	3.83	0.275	2.84
2.583	6.71	4.70	0.289	2.93
2.667	6.12	5.29	0.299	2.99
2.750	3.57	5.14	0.296	2.97
2.833	1.87	4.29	0.283	2.89
2.917	1.46	3.38	0.268	2.80
3.000	0.82	2.60	0.255	2.72
3.083	0.24	1.88	0.243	2.65
3.167	0.05	1.27	0.233	2.59
3.250	0.01	0.84	0.226	2.54
3.333	0.00	0.55	0.222	2.52
3.417	0.00	0.39	0.218	2.49
3.500	0.00	0.39	0.216	2.46
3.583	0.00	0.39	0.213	2.42
3.667	0.00	0.39	0.210	2.39
3.750	0.00	0.39	0.207	2.35
3.833	0.00	0.39	0.205	2.32
3.917	0.00	0.39	0.202	2.28
4.000	0.00	0.39	0.199	2.25
4.083	0.00	0.39	0.197	2.21
4.167	0.00	0.39	0.194	2.18
4.250	0.00	0.39	0.191	2.14
4.333	0.00	0.39	0.189	2.11
4.417	0.00	0.39	0.186	2.07
4.500	0.00	0.39	0.183	2.04
4.583	0.00	0.39	0.180	2.00
4.667	0.00	0.39	0.178	1.97
4.750	0.00	0.39	0.175	1.93
4.833	0.00	0.39	0.172	1.90
4.917	0.00	0.39	0.170	1.86
5.000	0.00	0.39	0.167	1.83
5.083	0.00	0.39	0.164	1.79
5.167	0.00	0.39	0.161	1.76
5.250	0.00	0.39	0.159	1.72
5.333	0.00	0.39	0.156	1.69
5.417	0.00	0.39	0.153	1.65
5.500	0.00	0.39	0.151	1.62

5.583	0.00	0.39	0.148	IO					1.58
5.667	0.00	0.39	0.145	IO					1.55
5.750	0.00	0.39	0.142	IO					1.51
5.833	0.00	0.39	0.140	IO					1.48
5.917	0.00	0.39	0.137	IO					1.44
6.000	0.00	0.39	0.134	IO					1.41
6.083	0.00	0.39	0.132	IO					1.37
6.167	0.00	0.39	0.129	IO					1.34
6.250	0.00	0.39	0.126	IO					1.30
6.333	0.00	0.39	0.124	IO					1.27
6.417	0.00	0.39	0.121	IO					1.23
6.500	0.00	0.39	0.118	IO					1.20
6.583	0.00	0.39	0.115	IO					1.16
6.667	0.00	0.39	0.113	IO					1.13
6.750	0.00	0.39	0.110	IO					1.09
6.833	0.00	0.39	0.107	IO					1.06
6.917	0.00	0.39	0.105	IO					1.02
7.000	0.00	0.39	0.102	IO					0.99
7.083	0.00	0.38	0.099	IO					0.96
7.167	0.00	0.37	0.097	IO					0.94
7.250	0.00	0.36	0.094	IO					0.91
7.333	0.00	0.35	0.092	IO					0.89
7.417	0.00	0.34	0.089	IO					0.87
7.500	0.00	0.33	0.087	IO					0.84
7.583	0.00	0.32	0.085	IO					0.82
7.667	0.00	0.32	0.083	IO					0.80
7.750	0.00	0.31	0.080	IO					0.78
7.833	0.00	0.30	0.078	IO					0.76
7.917	0.00	0.29	0.076	IO					0.74
8.000	0.00	0.28	0.074	IO					0.72
8.083	0.00	0.28	0.072	IO					0.70
8.167	0.00	0.27	0.071	IO					0.68
8.250	0.00	0.26	0.069	IO					0.67
8.333	0.00	0.26	0.067	IO					0.65
8.417	0.00	0.25	0.065	IO					0.63
8.500	0.00	0.24	0.063	IO					0.62
8.583	0.00	0.24	0.062	IO					0.60
8.667	0.00	0.23	0.060	IO					0.58
8.750	0.00	0.22	0.059	IO					0.57
8.833	0.00	0.22	0.057	IO					0.55
8.917	0.00	0.21	0.056	IO					0.54
9.000	0.00	0.21	0.054	O					0.53
9.083	0.00	0.20	0.053	O					0.51
9.167	0.00	0.20	0.051	O					0.50
9.250	0.00	0.19	0.050	O					0.49
9.333	0.00	0.19	0.049	O					0.47
9.417	0.00	0.18	0.048	O					0.46
9.500	0.00	0.18	0.046	O					0.45
9.583	0.00	0.17	0.045	O					0.44
9.667	0.00	0.17	0.044	O					0.43
9.750	0.00	0.16	0.043	O					0.42
9.833	0.00	0.16	0.042	O					0.40
9.917	0.00	0.15	0.041	O					0.39
10.000	0.00	0.15	0.040	O					0.38
10.083	0.00	0.15	0.039	O					0.37
10.167	0.00	0.14	0.038	O					0.36
10.250	0.00	0.14	0.037	O					0.35
10.333	0.00	0.14	0.036	O					0.35
10.417	0.00	0.13	0.035	O					0.34
10.500	0.00	0.13	0.034	O					0.33
10.583	0.00	0.13	0.033	O					0.32
10.667	0.00	0.12	0.032	O					0.31
10.750	0.00	0.12	0.031	O					0.30

```
10.833    0.00    0.12      0.030  O       |       |       |       |     0.30
10.917    0.00    0.11      0.030  O       |       |       |       |     0.29
11.000    0.00    0.11      0.029  O       |       |       |       |     0.28
11.083    0.00    0.11      0.028  O       |       |       |       |     0.27
11.167    0.00    0.10      0.027  O       |       |       |       |     0.27
11.250    0.00    0.10      0.027  O       |       |       |       |     0.26
11.333    0.00    0.10      0.026  O       |       |       |       |     0.25


      Remaining water in basin =    0.03 (Ac.Ft)


      ****************************HYDROGRAPH DATA***************************
                   Number of intervals =   136
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        5.295 (CFS)
                   Total volume =       0.533 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.100 to Point/Station      603.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    210.00 (Ft.)
      Elevation difference =    1.05 (Ft.)
      Slope of channel =  0.005000 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     1.204(CFS)
      Nearest computed pipe diameter  =     12.00(In.)
      Calculated individual pipe flow  =     1.204(CFS)
      Normal flow depth in pipe =    5.85(In.)
      Flow top width inside pipe =   12.00(In.)
      Critical Depth =    0.46(Ft.)
      Pipe flow velocity =      3.17(Ft/s)
      Travel time through pipe =    1.10 min.


      Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     5.295(CFS)
      Nearest computed pipe diameter  =     18.00(In.)
      Calculated individual pipe flow  =     5.295(CFS)
      Normal flow depth in pipe =   11.23(In.)
      Flow top width inside pipe =   17.44(In.)
      Critical Depth =    0.89(Ft.)
      Pipe flow velocity =      4.56(Ft/s)
      Travel time through pipe =    0.77 min
      ********************** SCS CONVEX CHANNEL ROUTING *********************
      Convex method of stream routing  data items:
      Using equation: Outflow =
      O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
              where c* = 1 - (1-c)^e and dt = c(length)/velocity
              c(v/v+1.7) =   0.7286   Travel time =   0.77 (min.)
```

```
        dt*(unit time interval) =   5.00(min.),  e=   6.2995
        dt(routing time-step) =   0.56 (min.),   c* =   0.9997

    Output hydrograph delayed by 0  unit time increments


    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                     P R I N T  O F  S T O R M
                  R u n o f f     H y d r o g r a p h
    ----------------------------------------------------------------------
                Hydrograph in   5   Minute intervals (CFS)

    ----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.3       2.6       4.0       5.3
-----------------------------------------------------------------------
  0+ 5       0.0050      0.01  O         |         |         |         |
  0+10       0.0198      0.02  O         |         |         |         |
  0+15       0.0393      0.04  O         |         |         |         |
  0+20       0.0601      0.06  O         |         |         |         |
  0+25       0.0834      0.09  O         |         |         |         |
  0+30       0.1100      0.11  O         |         |         |         |
  0+35       0.1380      0.14  |O        |         |         |         |
  0+40       0.1658      0.17  |O        |         |         |         |
  0+45       0.1946      0.20  |O        |         |         |         |
  0+50       0.2226      0.23  |O        |         |         |         |
  0+55       0.2477      0.25  |O        |         |         |         |
  1+ 0       0.2725      0.28  | O       |         |         |         |
  1+ 5       0.3008      0.30  | O       |         |         |         |
  1+10       0.3338      0.34  | O       |         |         |         |
  1+15       0.3689      0.37  | O       |         |         |         |
  1+20       0.3908      0.39  | O       |         |         |         |
  1+25       0.3931      0.39  | O       |         |         |         |
  1+30       0.3931      0.39  | O       |         |         |         |
  1+35       0.3931      0.39  | O       |         |         |         |
  1+40       0.3931      0.39  | O       |         |         |         |
  1+45       0.3931      0.39  | O       |         |         |         |
  1+50       0.3931      0.39  | O       |         |         |         |
  1+55       0.3931      0.39  | O       |         |         |         |
  2+ 0       0.3931      0.39  | O       |         |         |         |
  2+ 5       0.4326      0.44  |  O      |         |         |         |
  2+10       1.1592      1.25  |       OI|         |         |         |
  2+15       1.9245      2.01  |         |   OI    |         |         |
  2+20       2.5247      2.59  |         |        O|         |         |
  2+25       3.0352      3.09  |         |         | OI      |         |
  2+30       3.7505      3.83  |         |         |       O |         |
  2+35       4.5996      4.70  |         |         |         |   OI    |
  2+40       5.2275      5.29  |         |         |         |       OI
  2+45       5.1553      5.14  |         |         |         |      O |
  2+50       4.3889      4.29  |         |         |         | IO      |
  2+55       3.4800      3.38  |         |         |    IO   |         |
  3+ 0       2.6843      2.60  |         |        IO         |         |
  3+ 5       1.9565      1.88  |         |   O     |         |         |
  3+10       1.3402      1.27  |        IO         |         |         |
  3+15       0.8876      0.84  |     O   |         |         |         |
  3+20       0.5802      0.55  |   O     |         |         |         |
  3+25       0.4104      0.39  | IO      |         |         |         |
  3+30       0.3931      0.39  | O       |         |         |         |
  3+35       0.3931      0.39  | O       |         |         |         |
  3+40       0.3931      0.39  | O       |         |         |         |
  3+45       0.3931      0.39  | O       |         |         |         |
  3+50       0.3931      0.39  | O       |         |         |         |
  3+55       0.3931      0.39  | O       |         |         |         |
  4+ 0       0.3931      0.39  | O       |         |         |         |
```

4+ 5	0.3931	0.39	O				
4+10	0.3931	0.39	O				
4+15	0.3931	0.39	O				
4+20	0.3931	0.39	O				
4+25	0.3931	0.39	O				
4+30	0.3931	0.39	O				
4+35	0.3931	0.39	O				
4+40	0.3931	0.39	O				
4+45	0.3931	0.39	O				
4+50	0.3931	0.39	O				
4+55	0.3931	0.39	O				
5+ 0	0.3931	0.39	O				
5+ 5	0.3931	0.39	O				
5+10	0.3931	0.39	O				
5+15	0.3931	0.39	O				
5+20	0.3931	0.39	O				
5+25	0.3931	0.39	O				
5+30	0.3931	0.39	O				
5+35	0.3931	0.39	O				
5+40	0.3931	0.39	O				
5+45	0.3931	0.39	O				
5+50	0.3931	0.39	O				
5+55	0.3931	0.39	O				
6+ 0	0.3931	0.39	O				
6+ 5	0.3931	0.39	O				
6+10	0.3931	0.39	O				
6+15	0.3931	0.39	O				
6+20	0.3931	0.39	O				
6+25	0.3931	0.39	O				
6+30	0.3931	0.39	O				
6+35	0.3931	0.39	O				
6+40	0.3931	0.39	O				
6+45	0.3931	0.39	O				
6+50	0.3931	0.39	O				
6+55	0.3931	0.39	O				
7+ 0	0.3893	0.39	O				
7+ 5	0.3799	0.38	O				
7+10	0.3700	0.37	O				
7+15	0.3604	0.36	O				
7+20	0.3511	0.35	O				
7+25	0.3420	0.34	O				
7+30	0.3331	0.33	O				
7+35	0.3245	0.32	O				
7+40	0.3160	0.32	O				
7+45	0.3078	0.31	O				
7+50	0.2999	0.30	O				
7+55	0.2921	0.29	O				
8+ 0	0.2845	0.28	O				
8+ 5	0.2771	0.28	O				
8+10	0.2699	0.27	O				
8+15	0.2629	0.26	O				
8+20	0.2561	0.26	O				
8+25	0.2495	0.25	O				
8+30	0.2430	0.24	O				
8+35	0.2367	0.24	O				
8+40	0.2305	0.23	O				
8+45	0.2246	0.22	O				
8+50	0.2187	0.22	O				
8+55	0.2131	0.21	O				
9+ 0	0.2075	0.21	O				
9+ 5	0.2022	0.20	O				
9+10	0.1969	0.20	O				
9+15	0.1918	0.19	O				

```
  9+20       0.1868      0.19  |O        |         |         |         |
  9+25       0.1820      0.18  |O        |         |         |         |
  9+30       0.1773      0.18  |O        |         |         |         |
  9+35       0.1727      0.17  |O        |         |         |         |
  9+40       0.1682      0.17  |O        |         |         |         |
  9+45       0.1638      0.16  |O        |         |         |         |
  9+50       0.1596      0.16  |O        |         |         |         |
  9+55       0.1554      0.15  |O        |         |         |         |
 10+ 0       0.1514      0.15  |O        |         |         |         |
 10+ 5       0.1475      0.15  |O        |         |         |         |
 10+10       0.1436      0.14  |O        |         |         |         |
 10+15       0.1399      0.14  |O        |         |         |         |
 10+20       0.1363      0.14  |O        |         |         |         |
 10+25       0.1328      0.13  IO        |         |         |         |
 10+30       0.1293      0.13  O         |         |         |         |
 10+35       0.1260      0.13  O         |         |         |         |
 10+40       0.1227      0.12  O         |         |         |         |
 10+45       0.1195      0.12  O         |         |         |         |
 10+50       0.1164      0.12  O         |         |         |         |
 10+55       0.1134      0.11  O         |         |         |         |
 11+ 0       0.1104      0.11  O         |         |         |         |
 11+ 5       0.1076      0.11  O         |         |         |         |
 11+10       0.1048      0.10  O         |         |         |         |
 11+15       0.1021      0.10  O         |         |         |         |
 11+20       0.0994      0.10  O         |         |         |         |
 11+25       0.0111      0.00  O         |         |         |         |
 11+30       0.0000      0.00  O         |         |         |         |
---------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   138
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        5.227 (CFS)
                   Total volume =       0.533 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.200 to Point/Station      603.200
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259FPOND103.rte
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =     0
                   Time interval =    0.0 (Min.)
                   Maximum/Peak flow rate =        0.000 (CFS)
                   Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------
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                    FLOOD HYDROGRAPH ROUTING PROGRAM
             Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                         Study date: 01/31/18

     ---------------------------------------------------------------------
     PM #13523
     MILL CREEK PROMENADE
     AREA F (Pond F)- Q10yr6hr(ONSITE)- Unit Hydrograph Method
     ---------------------------------------------------------------------


     Program License Serial Number 4066

     ---------------------------------------------------------------------
     ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: 27259UHF1610.rte
     ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    75
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        4.081 (CFS)
                  Total volume =       0.492 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
     **********************************************************************



     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
     Process from Point/Station      602.000 to Point/Station      603.000
     **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
     ______________________________________________________________________
     ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: 27259UHF2610.rte
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                       P R I N T   O F   S T O R M
                        R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals (CFS)

     ---------------------------------------------------------------------
Time(h+m) Add q(CFS)  Tot. Q   0         1.7       3.3       5.0       6.6
-----------------------------------------------------------------------
  0+ 5       0.0791      0.18  qQ        |         |         |         |
  0+10       0.1613      0.41  q Q       |         |         |         |
  0+15       0.1901      0.49  |qQ       |         |         |         |
  0+20       0.1936      0.51  |q Q      |         |         |         |
  0+25       0.1936      0.51  |q Q      |         |         |         |
  0+30       0.2222      0.58  |q Q      |         |         |         |
  0+35       0.2415      0.64  |q Q      |         |         |         |
  0+40       0.2450      0.65  |q Q      |         |         |         |
  0+45       0.2450      0.65  |q Q      |         |         |         |
  0+50       0.2450      0.65  |q Q      |         |         |         |
  0+55       0.2450      0.65  |q Q      |         |         |         |
  1+ 0       0.2736      0.72  |q  Q     |         |         |         |
  1+ 5       0.2929      0.77  |q  Q     |         |         |         |
  1+10       0.2964      0.78  |q  Q     |         |         |         |
  1+15       0.2964      0.79  |q  Q     |         |         |         |
```

```
   1+20       0.2964      0.79  |q  Q     |         |         |         |
   1+25       0.2964      0.79  |q  Q     |         |         |         |
   1+30       0.2964      0.79  |q  Q     |         |         |         |
   1+35       0.2964      0.79  |q  Q     |         |         |         |
   1+40       0.2964      0.79  |q  Q     |         |         |         |
   1+45       0.2964      0.79  |q  Q     |         |         |         |
   1+50       0.2964      0.79  |q  Q     |         |         |         |
   1+55       0.2964      0.79  |q  Q     |         |         |         |
   2+ 0       0.3250      0.85  |q   Q    |         |         |         |
   2+ 5       0.3158      0.84  |q   Q    |         |         |         |
   2+10       0.3284      0.86  |q   Q    |         |         |         |
   2+15       0.3444      0.91  | q  Q    |         |         |         |
   2+20       0.3478      0.92  | q  Q    |         |         |         |
   2+25       0.3478      0.92  | q  Q    |         |         |         |
   2+30       0.3478      0.92  | q  Q    |         |         |         |
   2+35       0.3478      0.92  | q  Q    |         |         |         |
   2+40       0.3478      0.92  | q  Q    |         |         |         |
   2+45       0.3764      0.99  | q  Q    |         |         |         |
   2+50       0.3958      1.04  | q   Q   |         |         |         |
   2+55       0.3992      1.06  | q   Q   |         |         |         |
   3+ 0       0.3992      1.06  | q   Q   |         |         |         |
   3+ 5       0.3992      1.06  | q   Q   |         |         |         |
   3+10       0.4278      1.13  | q   Q   |         |         |         |
   3+15       0.4472      1.18  | q    Q  |         |         |         |
   3+20       0.4506      1.19  | q    Q  |         |         |         |
   3+25       0.4792      1.26  | q    Q  |         |         |         |
   3+30       0.5272      1.38  |  q    Q |         |         |         |
   3+35       0.5786      1.52  |  q     Q|         |         |         |
   3+40       0.6014      1.59  |  q     Q|         |         |         |
   3+45       0.6334      1.67  |  q      Q         |         |         |
   3+50       0.6528      1.73  |  q      Q         |         |         |
   3+55       0.6848      1.80  |   q     Q         |         |         |
   4+ 0       0.7042      1.86  |   q     |Q        |         |         |
   4+ 5       0.7362      1.94  |   q     |Q        |         |         |
   4+10       0.7842      2.07  |   q     | Q       |         |         |
   4+15       0.8356      2.20  |    q    |  Q      |         |         |
   4+20       0.8870      2.33  |    q    |   Q     |         |         |
   4+25       0.9384      2.47  |    q    |   Q     |         |         |
   4+30       0.9612      2.54  |    q    |    Q    |         |         |
   4+35       0.9932      2.62  |    q    |    Q    |         |         |
   4+40       1.0412      2.75  |     q   |     Q   |         |         |
   4+45       1.0926      2.88  |     q   |      Q  |         |         |
   4+50       1.1154      2.95  |     q   |      Q  |         |         |
   4+55       1.1474      3.03  |     q   |       Q |         |         |
   5+ 0       1.1954      3.16  |      q  |        Q|         |         |
   5+ 5       1.3612      3.56  |       q |         |Q        |         |
   5+10       1.6044      4.18  |        q|         |    Q    |         |
   5+15       1.8043      4.72  |         q         |       Q |         |
   5+20       1.9653      5.15  |         |q        |         |Q        |
   5+25       2.1767      5.70  |         |  q      |         |   Q     |
   5+30       2.5412      6.62  |         |    q    |         |         Q
   5+35       1.6750      4.72  |         q         |       Q |         |
   5+40       0.7032      2.11  |   q     | Q       |         |         |
   5+45       0.2964      0.99  |q   Q    |         |         |         |
   5+50       0.1753      0.52  |q Q      |         |         |         |
   5+55       0.0884      0.27  qQ        |         |         |         |
   6+ 0       0.0712      0.19  qQ        |         |         |         |
   6+ 5       0.0344      0.11  Q         |         |         |         |
   6+10       0.0056      0.02  Q         |         |         |         |
   6+15       0.0000      0.01  Q         |         |         |         |
-----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                 Number of intervals =    75
```

```
             Time interval =    5.0 (Min.)
             Maximum/Peak flow rate =        6.622 (CFS)
             Total volume =       0.790 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

----------------------------------------------------------------------


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      603.000 to Point/Station      603.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

Program computation of outflow v. depth




CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    2.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.50(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.50(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

Total outflow at this depth =     10.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))
```

```
Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     14.53(CFS)

--------------------------------------------------------------------
Total number of inflow hydrograph intervals = 75
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
--------------------------------------------------------------------
--------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
-----------------------------------------------------------------------
--------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
-----------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.103      0.393      0.102        0.104
   2.500      0.219      0.393      0.218        0.220
   3.500      0.382     10.390      0.346        0.418
   4.000      0.460     14.530      0.410        0.510
--------------------------------------------------------------------
              Hydrograph Detention Basin Routing
-----------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-----------------------------------------------------------------------
 Time   Inflow  Outflow    Storage                                    Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0       1.7    3.31    4.97    6.62 (Ft.)
 0.083    0.18    0.00      0.001  O       |       |       |       |     0.01
 0.167    0.41    0.01      0.003  OI      |       |       |       |     0.03
 0.250    0.49    0.02      0.006  O I     |       |       |       |     0.05
 0.333    0.51    0.03      0.009  O I     |       |       |       |     0.09
 0.417    0.51    0.05      0.012  O I     |       |       |       |     0.12
 0.500    0.58    0.06      0.015  O I     |       |       |       |     0.15
 0.583    0.64    0.07      0.019  O  I    |       |       |       |     0.19
 0.667    0.65    0.09      0.023  O  I    |       |       |       |     0.22
 0.750    0.65    0.10      0.027  O  I    |       |       |       |     0.26
 0.833    0.65    0.12      0.031  O  I    |       |       |       |     0.30
 0.917    0.65    0.13      0.034  O  I    |       |       |       |     0.33
 1.000    0.72    0.14      0.038  O  I    |       |       |       |     0.37
 1.083    0.77    0.16      0.042  O  I    |       |       |       |     0.41
 1.167    0.78    0.18      0.046  O  I    |       |       |       |     0.45
 1.250    0.79    0.19      0.050  O  I    |       |       |       |     0.49
 1.333    0.79    0.21      0.054  |O I    |       |       |       |     0.53
 1.417    0.79    0.22      0.058  |O I    |       |       |       |     0.57
 1.500    0.79    0.24      0.062  |O I    |       |       |       |     0.60
 1.583    0.79    0.25      0.066  |O I    |       |       |       |     0.64
 1.667    0.79    0.27      0.070  |O I    |       |       |       |     0.68
 1.750    0.79    0.28      0.073  |O I    |       |       |       |     0.71
 1.833    0.79    0.29      0.077  |O I    |       |       |       |     0.74
```

1.917	0.79	0.30	0.080	|O I |	|	|	|	0.78
2.000	0.85	0.32	0.083	|O I |	|	|	|	0.81
2.083	0.84	0.33	0.087	|O I |	|	|	|	0.84
2.167	0.86	0.35	0.091	|O I |	|	|	|	0.88
2.250	0.91	0.36	0.094	|O I |	|	|	|	0.91
2.333	0.92	0.37	0.098	|O I |	|	|	|	0.95
2.417	0.92	0.39	0.102	|O I |	|	|	|	0.99
2.500	0.92	0.39	0.105	|O I |	|	|	|	1.03
2.583	0.92	0.39	0.109	|O I |	|	|	|	1.08
2.667	0.92	0.39	0.113	|O I |	|	|	|	1.12
2.750	0.99	0.39	0.117	|O I |	|	|	|	1.17
2.833	1.04	0.39	0.121	|O I |	|	|	|	1.23
2.917	1.06	0.39	0.125	|O I |	|	|	|	1.29
3.000	1.06	0.39	0.130	|O I |	|	|	|	1.35
3.083	1.06	0.39	0.134	|O I |	|	|	|	1.41
3.167	1.13	0.39	0.139	|O I |	|	|	|	1.47
3.250	1.18	0.39	0.145	|O I |	|	|	|	1.54
3.333	1.19	0.39	0.150	|O I |	|	|	|	1.61
3.417	1.26	0.39	0.156	|O I |	|	|	|	1.68
3.500	1.38	0.39	0.162	|O I |	|	|	|	1.76
3.583	1.52	0.39	0.169	|O I|	|	|	|	1.86
3.667	1.59	0.39	0.177	|O I|	|	|	|	1.96
3.750	1.67	0.39	0.186	|O I |	|	|	|	2.07
3.833	1.73	0.39	0.195	|O I |	|	|	|	2.19
3.917	1.80	0.39	0.204	|O I |	|	|	|	2.31
4.000	1.86	0.39	0.214	|O I |	|	|	|	2.44
4.083	1.94	0.68	0.224	| O |I |	|	|	|	2.53
4.167	2.07	1.14	0.231	| O |I |	|	|	|	2.57
4.250	2.20	1.49	0.237	| O| I |	|	|	|	2.61
4.333	2.33	1.76	0.241	| O I |	|	|	|	2.64
4.417	2.47	1.98	0.245	| |O I |	|	|	|	2.66
4.500	2.54	2.17	0.248	| | O I |	|	|	|	2.68
4.583	2.62	2.31	0.250	| | OI |	|	|	|	2.69
4.667	2.75	2.44	0.252	| | O I |	|	|	|	2.70
4.750	2.88	2.57	0.255	| | OI |	|	|	|	2.72
4.833	2.95	2.69	0.256	| | OI |	|	|	|	2.73
4.917	3.03	2.80	0.258	| | OI |	|	|	|	2.74
5.000	3.16	2.90	0.260	| | OI|	|	|	|	2.75
5.083	3.56	3.06	0.262	| | O |I |	|	|	|	2.77
5.167	4.18	3.34	0.267	| | O I |	|	|	|	2.79
5.250	4.72	3.73	0.273	| | | O I |	|	|	|	2.83
5.333	5.15	4.15	0.280	| | | O I |	|	|	|	2.88
5.417	5.70	4.59	0.288	| | | O | I |	|	|	|	2.92
5.500	6.62	5.14	0.296	| | | O I |	|	|	|	2.97
5.583	4.72	5.33	0.299	| | | I |O |	|	|	|	2.99
5.667	2.11	4.66	0.289	| | I | O |	|	|	|	2.93
5.750	0.99	3.57	0.271	| I | |O |	|	|	|	2.82
5.833	0.52	2.59	0.255	| I | O |	|	|	|	2.72
5.917	0.27	1.82	0.242	|I O |	|	|	|	2.64
6.000	0.19	1.27	0.233	I O |	|	|	|	2.59
6.083	0.11	0.88	0.227	I O |	|	|	|	2.55
6.167	0.02	0.59	0.222	I O |	|	|	|	2.52
6.250	0.01	0.39	0.219	IO |	|	|	|	2.50
6.333	0.00	0.39	0.216	IO |	|	|	|	2.46
6.417	0.00	0.39	0.214	IO |	|	|	|	2.43
6.500	0.00	0.39	0.211	IO |	|	|	|	2.39
6.583	0.00	0.39	0.208	IO |	|	|	|	2.36
6.667	0.00	0.39	0.205	IO |	|	|	|	2.32
6.750	0.00	0.39	0.203	IO |	|	|	|	2.29
6.833	0.00	0.39	0.200	IO |	|	|	|	2.25
6.917	0.00	0.39	0.197	IO |	|	|	|	2.22
7.000	0.00	0.39	0.195	IO |	|	|	|	2.18
7.083	0.00	0.39	0.192	IO |	|	|	|	2.15

7.167	0.00	0.39	0.189	IO	|	|	|	|	2.11
7.250	0.00	0.39	0.187	IO	|	|	|	|	2.08
7.333	0.00	0.39	0.184	IO	|	|	|	|	2.04
7.417	0.00	0.39	0.181	IO	|	|	|	|	2.01
7.500	0.00	0.39	0.178	IO	|	|	|	|	1.97
7.583	0.00	0.39	0.176	IO	|	|	|	|	1.94
7.667	0.00	0.39	0.173	IO	|	|	|	|	1.90
7.750	0.00	0.39	0.170	IO	|	|	|	|	1.87
7.833	0.00	0.39	0.168	IO	|	|	|	|	1.83
7.917	0.00	0.39	0.165	IO	|	|	|	|	1.80
8.000	0.00	0.39	0.162	IO	|	|	|	|	1.76
8.083	0.00	0.39	0.159	IO	|	|	|	|	1.73
8.167	0.00	0.39	0.157	IO	|	|	|	|	1.69
8.250	0.00	0.39	0.154	IO	|	|	|	|	1.66
8.333	0.00	0.39	0.151	IO	|	|	|	|	1.62
8.417	0.00	0.39	0.149	IO	|	|	|	|	1.59
8.500	0.00	0.39	0.146	IO	|	|	|	|	1.55
8.583	0.00	0.39	0.143	IO	|	|	|	|	1.52
8.667	0.00	0.39	0.140	IO	|	|	|	|	1.48
8.750	0.00	0.39	0.138	IO	|	|	|	|	1.45
8.833	0.00	0.39	0.135	IO	|	|	|	|	1.41
8.917	0.00	0.39	0.132	IO	|	|	|	|	1.38
9.000	0.00	0.39	0.130	IO	|	|	|	|	1.34
9.083	0.00	0.39	0.127	IO	|	|	|	|	1.31
9.167	0.00	0.39	0.124	IO	|	|	|	|	1.27
9.250	0.00	0.39	0.122	IO	|	|	|	|	1.24
9.333	0.00	0.39	0.119	IO	|	|	|	|	1.20
9.417	0.00	0.39	0.116	IO	|	|	|	|	1.17
9.500	0.00	0.39	0.113	IO	|	|	|	|	1.13
9.583	0.00	0.39	0.111	IO	|	|	|	|	1.10
9.667	0.00	0.39	0.108	IO	|	|	|	|	1.06
9.750	0.00	0.39	0.105	IO	|	|	|	|	1.03
9.833	0.00	0.39	0.103	IO	|	|	|	|	1.00
9.917	0.00	0.38	0.100	IO	|	|	|	|	0.97
10.000	0.00	0.37	0.097	IO	|	|	|	|	0.95
10.083	0.00	0.36	0.095	IO	|	|	|	|	0.92
10.167	0.00	0.35	0.092	IO	|	|	|	|	0.90
10.250	0.00	0.34	0.090	IO	|	|	|	|	0.87
10.333	0.00	0.33	0.088	IO	|	|	|	|	0.85
10.417	0.00	0.33	0.085	IO	|	|	|	|	0.83
10.500	0.00	0.32	0.083	IO	|	|	|	|	0.81
10.583	0.00	0.31	0.081	IO	|	|	|	|	0.79
10.667	0.00	0.30	0.079	IO	|	|	|	|	0.77
10.750	0.00	0.29	0.077	IO	|	|	|	|	0.75
10.833	0.00	0.29	0.075	IO	|	|	|	|	0.73
10.917	0.00	0.28	0.073	IO	|	|	|	|	0.71
11.000	0.00	0.27	0.071	IO	|	|	|	|	0.69
11.083	0.00	0.26	0.069	IO	|	|	|	|	0.67
11.167	0.00	0.26	0.067	IO	|	|	|	|	0.65
11.250	0.00	0.25	0.066	IO	|	|	|	|	0.64
11.333	0.00	0.24	0.064	IO	|	|	|	|	0.62
11.417	0.00	0.24	0.062	IO	|	|	|	|	0.60
11.500	0.00	0.23	0.061	IO	|	|	|	|	0.59
11.583	0.00	0.23	0.059	IO	|	|	|	|	0.57
11.667	0.00	0.22	0.058	IO	|	|	|	|	0.56
11.750	0.00	0.21	0.056	IO	|	|	|	|	0.54
11.833	0.00	0.21	0.055	IO	|	|	|	|	0.53
11.917	0.00	0.20	0.053	O	|	|	|	|	0.52
12.000	0.00	0.20	0.052	O	|	|	|	|	0.50
12.083	0.00	0.19	0.050	O	|	|	|	|	0.49
12.167	0.00	0.19	0.049	O	|	|	|	|	0.48
12.250	0.00	0.18	0.048	O	|	|	|	|	0.46
12.333	0.00	0.18	0.047	O	|	|	|	|	0.45

```
12.417    0.00    0.17      0.045  O       |       |       |       |     0.44
12.500    0.00    0.17      0.044  O       |       |       |       |     0.43
12.583    0.00    0.16      0.043  O       |       |       |       |     0.42
12.667    0.00    0.16      0.042  O       |       |       |       |     0.41
12.750    0.00    0.16      0.041  O       |       |       |       |     0.40
12.833    0.00    0.15      0.040  O       |       |       |       |     0.39
12.917    0.00    0.15      0.039  O       |       |       |       |     0.38
13.000    0.00    0.14      0.038  O       |       |       |       |     0.37
13.083    0.00    0.14      0.037  O       |       |       |       |     0.36
13.167    0.00    0.14      0.036  O       |       |       |       |     0.35
13.250    0.00    0.13      0.035  O       |       |       |       |     0.34
13.333    0.00    0.13      0.034  O       |       |       |       |     0.33
13.417    0.00    0.13      0.033  O       |       |       |       |     0.32
13.500    0.00    0.12      0.032  O       |       |       |       |     0.31
13.583    0.00    0.12      0.031  O       |       |       |       |     0.31
13.667    0.00    0.12      0.031  O       |       |       |       |     0.30
13.750    0.00    0.11      0.030  O       |       |       |       |     0.29
13.833    0.00    0.11      0.029  O       |       |       |       |     0.28
13.917    0.00    0.11      0.028  O       |       |       |       |     0.27
14.000    0.00    0.11      0.028  O       |       |       |       |     0.27
14.083    0.00    0.10      0.027  O       |       |       |       |     0.26
14.167    0.00    0.10      0.026  O       |       |       |       |     0.25

      Remaining water in basin =    0.03 (Ac.Ft)

      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   170
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        5.326 (CFS)
                   Total volume =       0.764 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.100 to Point/Station      603.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    210.00 (Ft.)
      Elevation difference =    1.05 (Ft.)
      Slope of channel =  0.005000 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     1.094(CFS)
      Nearest computed pipe diameter  =      9.00(In.)
      Calculated individual pipe flow  =     1.094(CFS)
      Normal flow depth in pipe =    6.90(In.)
      Flow top width inside pipe =    7.61(In.)
      Critical Depth =    0.48(Ft.)
      Pipe flow velocity =      3.01(Ft/s)
      Travel time through pipe =    1.16 min.
```

```
Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow  =     5.326(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.326(CFS)
Normal flow depth in pipe =   11.27(In.)
Flow top width inside pipe =   17.42(In.)
Critical Depth =    0.89(Ft.)
Pipe flow velocity =      4.57(Ft/s)
Travel time through pipe =    0.77 min.


********************** SCS CONVEX CHANNEL ROUTING ********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.7289   Travel time =   0.77 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   6.3051
       dt(routing time-step) =   0.56 (min.),   c* =   0.9997

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

--------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        1.3       2.7       4.0       5.3
--------------------------------------------------------------------
  0+ 5       0.0021      0.00  O         |         |         |         |
  0+10       0.0091      0.01  O         |         |         |         |
  0+15       0.0201      0.02  O         |         |         |         |
  0+20       0.0324      0.03  O         |         |         |         |
  0+25       0.0448      0.05  O         |         |         |         |
  0+30       0.0577      0.06  O         |         |         |         |
  0+35       0.0718      0.07  O         |         |         |         |
  0+40       0.0864      0.09  O         |         |         |         |
  0+45       0.1010      0.10  O         |         |         |         |
  0+50       0.1152      0.12  O         |         |         |         |
  0+55       0.1291      0.13  O         |         |         |         |
  1+ 0       0.1434      0.14  |O        |         |         |         |
  1+ 5       0.1588      0.16  |O        |         |         |         |
  1+10       0.1747      0.18  |O        |         |         |         |
  1+15       0.1905      0.19  |O        |         |         |         |
  1+20       0.2059      0.21  |O        |         |         |         |
  1+25       0.2210      0.22  |O        |         |         |         |
  1+30       0.2356      0.24  |O        |         |         |         |
  1+35       0.2499      0.25  |O        |         |         |         |
  1+40       0.2638      0.27  |O        |         |         |         |
  1+45       0.2774      0.28  | O       |         |         |         |
  1+50       0.2906      0.29  | O       |         |         |         |
  1+55       0.3034      0.30  | O       |         |         |         |
  2+ 0       0.3167      0.32  | O       |         |         |         |
  2+ 5       0.3304      0.33  | O       |         |         |         |
  2+10       0.3439      0.35  | O       |         |         |         |
  2+15       0.3579      0.36  | O       |         |         |         |
```

```
2+20       0.3723      0.37  | O       |         |         |         |
2+25       0.3865      0.39  | O       |         |         |         |
2+30       0.3925      0.39  | O       |         |         |         |
2+35       0.3931      0.39  | O       |         |         |         |
2+40       0.3931      0.39  | O       |         |         |         |
2+45       0.3931      0.39  | O       |         |         |         |
2+50       0.3931      0.39  | O       |         |         |         |
2+55       0.3931      0.39  | O       |         |         |         |
3+ 0       0.3931      0.39  | O       |         |         |         |
3+ 5       0.3931      0.39  | O       |         |         |         |
3+10       0.3931      0.39  | O       |         |         |         |
3+15       0.3931      0.39  | O       |         |         |         |
3+20       0.3931      0.39  | O       |         |         |         |
3+25       0.3931      0.39  | O       |         |         |         |
3+30       0.3931      0.39  | O       |         |         |         |
3+35       0.3931      0.39  | O       |         |         |         |
3+40       0.3931      0.39  | O       |         |         |         |
3+45       0.3931      0.39  | O       |         |         |         |
3+50       0.3931      0.39  | O       |         |         |         |
3+55       0.3931      0.39  | O       |         |         |         |
4+ 0       0.3931      0.39  | O       |         |         |         |
4+ 5       0.6463      0.68  |   OI    |         |         |         |
4+10       1.0884      1.14  |       O |         |         |         |
4+15       1.4473      1.49  |         OI        |         |         |
4+20       1.7277      1.76  |         | OI      |         |         |
4+25       1.9578      1.98  |         |   O     |         |         |
4+30       2.1449      2.17  |         |     O   |         |         |
4+35       2.2941      2.31  |         |      O  |         |         |
4+40       2.4261      2.44  |         |       O |         |         |
4+45       2.5561      2.57  |         |        O|         |         |
4+50       2.6773      2.69  |         |         O         |         |
4+55       2.7834      2.80  |         |         O         |         |
5+ 0       2.8873      2.90  |         |         |O        |         |
5+ 5       3.0404      3.06  |         |         | O       |         |
5+10       3.3092      3.34  |         |         |   OI    |         |
5+15       3.6839      3.73  |         |         |      O  |         |
5+20       4.1011      4.15  |         |         |         OI        |
5+25       4.5444      4.59  |         |         |         |   O     |
5+30       5.0798      5.14  |         |         |         |       O |
5+35       5.3052      5.33  |         |         |         |        OI
5+40       4.7334      4.66  |         |         |         |   IO    |
5+45       3.6945      3.57  |         |         |     IO  |         |
5+50       2.6999      2.59  |         |        IO         |         |
5+55       1.9100      1.82  |         |  IO     |         |         |
6+ 0       1.3308      1.27  |        O|         |         |         |
6+ 5       0.9226      0.88  |     O   |         |         |         |
6+10       0.6267      0.59  |   O     |         |         |         |
6+15       0.4157      0.39  | IO      |         |         |         |
6+20       0.3931      0.39  | O       |         |         |         |
6+25       0.3931      0.39  | O       |         |         |         |
6+30       0.3931      0.39  | O       |         |         |         |
6+35       0.3931      0.39  | O       |         |         |         |
6+40       0.3931      0.39  | O       |         |         |         |
6+45       0.3931      0.39  | O       |         |         |         |
6+50       0.3931      0.39  | O       |         |         |         |
6+55       0.3931      0.39  | O       |         |         |         |
7+ 0       0.3931      0.39  | O       |         |         |         |
7+ 5       0.3931      0.39  | O       |         |         |         |
7+10       0.3931      0.39  | O       |         |         |         |
7+15       0.3931      0.39  | O       |         |         |         |
7+20       0.3931      0.39  | O       |         |         |         |
7+25       0.3931      0.39  | O       |         |         |         |
7+30       0.3931      0.39  | O       |         |         |         |
```

7+35	0.3931	0.39	O				
7+40	0.3931	0.39	O				
7+45	0.3931	0.39	O				
7+50	0.3931	0.39	O				
7+55	0.3931	0.39	O				
8+ 0	0.3931	0.39	O				
8+ 5	0.3931	0.39	O				
8+10	0.3931	0.39	O				
8+15	0.3931	0.39	O				
8+20	0.3931	0.39	O				
8+25	0.3931	0.39	O				
8+30	0.3931	0.39	O				
8+35	0.3931	0.39	O				
8+40	0.3931	0.39	O				
8+45	0.3931	0.39	O				
8+50	0.3931	0.39	O				
8+55	0.3931	0.39	O				
9+ 0	0.3931	0.39	O				
9+ 5	0.3931	0.39	O				
9+10	0.3931	0.39	O				
9+15	0.3931	0.39	O				
9+20	0.3931	0.39	O				
9+25	0.3931	0.39	O				
9+30	0.3931	0.39	O				
9+35	0.3931	0.39	O				
9+40	0.3931	0.39	O				
9+45	0.3931	0.39	O				
9+50	0.3917	0.39	O				
9+55	0.3825	0.38	O				
10+ 0	0.3726	0.37	O				
10+ 5	0.3629	0.36	O				
10+10	0.3535	0.35	O				
10+15	0.3443	0.34	O				
10+20	0.3354	0.33	O				
10+25	0.3267	0.33	O				
10+30	0.3182	0.32	O				
10+35	0.3100	0.31	O				
10+40	0.3019	0.30	O				
10+45	0.2941	0.29	O				
10+50	0.2865	0.29	O				
10+55	0.2790	0.28	O				
11+ 0	0.2718	0.27	O				
11+ 5	0.2647	0.26	O				
11+10	0.2579	0.26	O				
11+15	0.2512	0.25	O				
11+20	0.2447	0.24	O				
11+25	0.2383	0.24	O				
11+30	0.2321	0.23	O				
11+35	0.2261	0.23	O				
11+40	0.2203	0.22	O				
11+45	0.2145	0.21	O				
11+50	0.2090	0.21	O				
11+55	0.2036	0.20	O				
12+ 0	0.1983	0.20	O				
12+ 5	0.1931	0.19	O				
12+10	0.1881	0.19	O				
12+15	0.1832	0.18	O				
12+20	0.1785	0.18	O				
12+25	0.1739	0.17	O				
12+30	0.1693	0.17	O				
12+35	0.1650	0.16	O				
12+40	0.1607	0.16	O				
12+45	0.1565	0.16	O				

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  12+50       0.1524      0.15  |O        |         |         |         |
  12+55       0.1485      0.15  |O        |         |         |         |
  13+ 0       0.1446      0.14  |O        |         |         |         |
  13+ 5       0.1409      0.14  |O        |         |         |         |
  13+10       0.1372      0.14  |O        |         |         |         |
  13+15       0.1337      0.13  |O        |         |         |         |
  13+20       0.1302      0.13  O         |         |         |         |
  13+25       0.1268      0.13  O         |         |         |         |
  13+30       0.1235      0.12  O         |         |         |         |
  13+35       0.1203      0.12  O         |         |         |         |
  13+40       0.1172      0.12  O         |         |         |         |
  13+45       0.1142      0.11  O         |         |         |         |
  13+50       0.1112      0.11  O         |         |         |         |
  13+55       0.1083      0.11  O         |         |         |         |
  14+ 0       0.1055      0.11  O         |         |         |         |
  14+ 5       0.1028      0.10  O         |         |         |         |
  14+10       0.1001      0.10  O         |         |         |         |
  14+15       0.0112      0.00  O         |         |         |         |
  14+20       0.0000      0.00  O         |         |         |         |
-----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   172
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        5.305 (CFS)
                  Total volume =       0.764 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.200 to Point/Station      603.200
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      _____________________________________________________________________
      Current stream hydrograph saved in file 27259FPOND106.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ---------------------------------------------------------------------
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                    FLOOD HYDROGRAPH ROUTING PROGRAM
             Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                         Study date: 01/31/18

     ---------------------------------------------------------------------
     PM #13523
     MILL CREEK PROMENADE
     AREA F (Pond F)- Q10yr24hr(ONSITE)- Unit Hydrograph Method
     ---------------------------------------------------------------------


     Program License Serial Number 4066

     ---------------------------------------------------------------------
     ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: 27259UHF12410.rte
     ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   291
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        1.396 (CFS)
                  Total volume =       0.685 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
     **********************************************************************



     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
     Process from Point/Station      602.000 to Point/Station      603.000
     **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
     ______________________________________________________________________
     ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: 27259UHF22410.rte
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                       P R I N T   O F   S T O R M
                        R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals (CFS)

     ---------------------------------------------------------------------
Time(h+m) Add q(CFS)  Tot. Q   0        0.6       1.1       1.7       2.2
-----------------------------------------------------------------------
  0+ 5       0.0253      0.06  qQ        |         |         |         |
  0+10       0.0425      0.11  qQ        |         |         |         |
  0+15       0.0455      0.12  q Q       |         |         |         |
  0+20       0.0582      0.15  |qQ       |         |         |         |
  0+25       0.0668      0.17  |q Q      |         |         |         |
  0+30       0.0683      0.18  |q Q      |         |         |         |
  0+35       0.0683      0.18  |q Q      |         |         |         |
  0+40       0.0683      0.18  |q Q      |         |         |         |
  0+45       0.0683      0.18  |q Q      |         |         |         |
  0+50       0.0809      0.21  |q Q      |         |         |         |
  0+55       0.0895      0.24  |q  Q     |         |         |         |
  1+ 0       0.0910      0.24  |q  Q     |         |         |         |
  1+ 5       0.0784      0.21  |q Q      |         |         |         |
  1+10       0.0698      0.19  |q Q      |         |         |         |
  1+15       0.0683      0.18  |q Q      |         |         |         |
```

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1+20       0.0683      0.18  |q Q      |         |         |         |
1+25       0.0683      0.18  |q Q      |         |         |         |
1+30       0.0683      0.18  |q Q      |         |         |         |
1+35       0.0683      0.18  |q Q      |         |         |         |
1+40       0.0683      0.18  |q Q      |         |         |         |
1+45       0.0683      0.18  |q Q      |         |         |         |
1+50       0.0809      0.21  |q Q      |         |         |         |
1+55       0.0895      0.24  |q  Q     |         |         |         |
2+ 0       0.0910      0.24  |q  Q     |         |         |         |
2+ 5       0.0910      0.24  |q  Q     |         |         |         |
2+10       0.0910      0.24  |q  Q     |         |         |         |
2+15       0.0910      0.24  |q  Q     |         |         |         |
2+20       0.0910      0.24  |q  Q     |         |         |         |
2+25       0.0910      0.24  |q  Q     |         |         |         |
2+30       0.0910      0.24  |q  Q     |         |         |         |
2+35       0.1037      0.27  |q  Q     |         |         |         |
2+40       0.1123      0.30  | q  Q    |         |         |         |
2+45       0.1138      0.30  | q  Q    |         |         |         |
2+50       0.1138      0.30  | q  Q    |         |         |         |
2+55       0.1138      0.30  | q  Q    |         |         |         |
3+ 0       0.1138      0.30  | q  Q    |         |         |         |
3+ 5       0.1138      0.30  | q  Q    |         |         |         |
3+10       0.1138      0.30  | q  Q    |         |         |         |
3+15       0.1138      0.30  | q  Q    |         |         |         |
3+20       0.1138      0.30  | q  Q    |         |         |         |
3+25       0.1138      0.30  | q  Q    |         |         |         |
3+30       0.1138      0.30  | q  Q    |         |         |         |
3+35       0.1138      0.30  | q  Q    |         |         |         |
3+40       0.1138      0.30  | q  Q    |         |         |         |
3+45       0.1138      0.30  | q  Q    |         |         |         |
3+50       0.1265      0.33  | q  Q    |         |         |         |
3+55       0.1351      0.36  | q   Q   |         |         |         |
4+ 0       0.1366      0.36  | q   Q   |         |         |         |
4+ 5       0.1366      0.36  | q   Q   |         |         |         |
4+10       0.1366      0.36  | q   Q   |         |         |         |
4+15       0.0609      0.19  |q Q      |         |         |         |
4+20       0.0254      0.08  qQ        |         |         |         |
4+25       0.0274      0.08  qQ        |         |         |         |
4+30       0.0300      0.08  qQ        |         |         |         |
4+35       0.0307      0.08  qQ        |         |         |         |
4+40       0.0314      0.08  qQ        |         |         |         |
4+45       0.0321      0.08  qQ        |         |         |         |
4+50       0.0482      0.12  q Q       |         |         |         |
4+55       0.0594      0.15  |qQ       |         |         |         |
5+ 0       0.0619      0.16  |qQ       |         |         |         |
5+ 5       0.0317      0.09  qQ        |         |         |         |
5+10       0.0115      0.04  Q         |         |         |         |
5+15       0.0085      0.03  Q         |         |         |         |
5+20       0.0246      0.06  qQ        |         |         |         |
5+25       0.0358      0.09  qQ        |         |         |         |
5+30       0.0383      0.10  qQ        |         |         |         |
5+35       0.0544      0.14  q Q       |         |         |         |
5+40       0.0656      0.17  |q Q      |         |         |         |
5+45       0.0681      0.18  |q Q      |         |         |         |
5+50       0.0688      0.18  |q Q      |         |         |         |
5+55       0.0695      0.18  |q Q      |         |         |         |
6+ 0       0.0701      0.19  |q Q      |         |         |         |
6+ 5       0.0863      0.22  |q Q      |         |         |         |
6+10       0.0974      0.26  |q  Q     |         |         |         |
6+15       0.0999      0.26  |q  Q     |         |         |         |
6+20       0.1006      0.27  |q  Q     |         |         |         |
6+25       0.1013      0.27  |q  Q     |         |         |         |
6+30       0.1019      0.27  |q  Q     |         |         |         |
```

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 6+35       0.1180      0.31  | q  Q    |         |         |         |
 6+40       0.1291      0.34  | q   Q   |         |         |         |
 6+45       0.1317      0.35  | q   Q   |         |         |         |
 6+50       0.1323      0.35  | q   Q   |         |         |         |
 6+55       0.1330      0.35  | q   Q   |         |         |         |
 7+ 0       0.1336      0.35  | q   Q   |         |         |         |
 7+ 5       0.1343      0.36  | q   Q   |         |         |         |
 7+10       0.1349      0.36  | q   Q   |         |         |         |
 7+15       0.1356      0.36  | q   Q   |         |         |         |
 7+20       0.1517      0.40  | q    Q  |         |         |         |
 7+25       0.1628      0.43  | q    Q  |         |         |         |
 7+30       0.1653      0.44  | q    Q  |         |         |         |
 7+35       0.1814      0.48  |  q    Q |         |         |         |
 7+40       0.1925      0.51  |  q     Q|         |         |         |
 7+45       0.1950      0.51  |  q     Q|         |         |         |
 7+50       0.2110      0.55  |  q     Q|         |         |         |
 7+55       0.2221      0.59  |  q      Q         |         |         |
 8+ 0       0.2246      0.59  |   q     Q         |         |         |
 8+ 5       0.2561      0.67  |   q     |Q        |         |         |
 8+10       0.2777      0.73  |   q     |  Q      |         |         |
 8+15       0.2820      0.74  |    q    |  Q      |         |         |
 8+20       0.2827      0.75  |    q    |  Q      |         |         |
 8+25       0.2833      0.75  |    q    |  Q      |         |         |
 8+30       0.2839      0.75  |    q    |  Q      |         |         |
 8+35       0.3000      0.79  |    q    |   Q     |         |         |
 8+40       0.3111      0.82  |    q    |   Q     |         |         |
 8+45       0.3135      0.83  |    q    |   Q     |         |         |
 8+50       0.3296      0.87  |    q    |    Q    |         |         |
 8+55       0.3407      0.90  |     q   |     Q   |         |         |
 9+ 0       0.3431      0.91  |     q   |     Q   |         |         |
 9+ 5       0.3746      0.98  |     q   |      Q  |         |         |
 9+10       0.3962      1.05  |      q  |       Q |         |         |
 9+15       0.4005      1.06  |      q  |       Q |         |         |
 9+20       0.4165      1.10  |      q  |        Q|         |         |
 9+25       0.4276      1.13  |      q  |         Q         |         |
 9+30       0.4300      1.14  |      q  |         Q         |         |
 9+35       0.4461      1.18  |      q  |         |Q        |         |
 9+40       0.4571      1.21  |       q |         |Q        |         |
 9+45       0.4596      1.22  |       q |         |Q        |         |
 9+50       0.4756      1.26  |       q |         | Q       |         |
 9+55       0.4867      1.29  |       q |         | Q       |         |
10+ 0       0.4891      1.30  |       q |         |  Q      |         |
10+ 5       0.3816      1.05  |      q  |       Q |         |         |
10+10       0.3090      0.84  |    q    |   Q     |         |         |
10+15       0.2966      0.80  |    q    |   Q     |         |         |
10+20       0.2972      0.79  |    q    |   Q     |         |         |
10+25       0.2977      0.79  |    q    |   Q     |         |         |
10+30       0.2983      0.79  |    q    |   Q     |         |         |
10+35       0.3761      0.97  |     q   |      Q  |         |         |
10+40       0.4290      1.12  |      q  |         Q         |         |
10+45       0.4388      1.15  |      q  |         Q         |         |
10+50       0.4394      1.16  |      q  |         Q         |         |
10+55       0.4400      1.17  |      q  |         Q         |         |
11+ 0       0.4405      1.17  |      q  |         Q         |         |
11+ 5       0.4257      1.13  |      q  |         Q         |         |
11+10       0.4158      1.10  |      q  |        Q|         |         |
11+15       0.4145      1.10  |      q  |        Q|         |         |
11+20       0.4150      1.10  |      q  |        Q|         |         |
11+25       0.4156      1.10  |      q  |        Q|         |         |
11+30       0.4161      1.10  |      q  |        Q|         |         |
11+35       0.3858      1.03  |     q   |       Q |         |         |
11+40       0.3654      0.97  |     q   |      Q  |         |         |
11+45       0.3623      0.96  |     q   |      Q  |         |         |
```

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11+50       0.3782      1.00  |     q   |      Q  |         |         |
11+55       0.3892      1.03  |     q   |       Q |         |         |
12+ 0       0.3916      1.04  |     q   |       Q |         |         |
12+ 5       0.5003      1.29  |       q |         |  Q      |         |
12+10       0.5740      1.50  |         q         |     Q   |         |
12+15       0.5876      1.55  |         q         |      Q  |         |
12+20       0.6035      1.60  |         q         |       Q |         |
12+25       0.6145      1.63  |         q         |        Q|         |
12+30       0.6169      1.63  |         |q        |        Q|         |
12+35       0.6483      1.71  |         |q        |         Q         |
12+40       0.6698      1.77  |         |q        |         |Q        |
12+45       0.6740      1.78  |         | q       |         |Q        |
12+50       0.6900      1.82  |         | q       |         | Q       |
12+55       0.7010      1.86  |         | q       |         |  Q      |
13+ 0       0.7033      1.86  |         | q       |         |  Q      |
13+ 5       0.7810      2.05  |         |  q      |         |     Q   |
13+10       0.8339      2.20  |         |   q     |         |        Q|
13+15       0.8437      2.23  |         |    q    |         |        Q|
13+20       0.8442      2.24  |         |    q    |         |        Q|
13+25       0.8447      2.24  |         |    q    |         |        Q|
13+30       0.8452      2.24  |         |    q    |         |         Q
13+35       0.6759      1.85  |         | q       |         | Q       |
13+40       0.5613      1.52  |         q         |      Q  |         |
13+45       0.5413      1.46  |        q|         |    Q    |         |
13+50       0.5418      1.44  |        q|         |    Q    |         |
13+55       0.5423      1.44  |        q|         |    Q    |         |
14+ 0       0.5428      1.44  |        q|         |    Q    |         |
14+ 5       0.6051      1.58  |         q         |       Q |         |
14+10       0.6474      1.71  |         |q        |         Q         |
14+15       0.6553      1.73  |         |q        |         Q         |
14+20       0.6404      1.70  |         |q        |         Q         |
14+25       0.6304      1.67  |         |q        |        Q|         |
14+30       0.6290      1.67  |         |q        |        Q|         |
14+35       0.6295      1.67  |         |q        |        Q|         |
14+40       0.6299      1.67  |         |q        |        Q|         |
14+45       0.6304      1.67  |         |q        |        Q|         |
14+50       0.6154      1.64  |         q         |        Q|         |
14+55       0.6054      1.61  |         q         |       Q |         |
15+ 0       0.6040      1.60  |         q         |       Q |         |
15+ 5       0.5891      1.57  |         q         |      Q  |         |
15+10       0.5791      1.54  |         q         |      Q  |         |
15+15       0.5777      1.53  |         q         |      Q  |         |
15+20       0.5627      1.50  |         q         |     Q   |         |
15+25       0.5527      1.47  |        q|         |     Q   |         |
15+30       0.5513      1.46  |        q|         |     Q   |         |
15+35       0.4900      1.32  |       q |         |  Q      |         |
15+40       0.4485      1.20  |       q |         |Q        |         |
15+45       0.4416      1.18  |      q  |         |Q        |         |
15+50       0.4420      1.17  |      q  |         Q         |         |
15+55       0.4424      1.17  |      q  |         Q         |         |
16+ 0       0.4429      1.17  |      q  |         Q         |         |
16+ 5       0.2117      0.64  |  q      |Q        |         |         |
16+10       0.0552      0.19  q  Q      |         |         |         |
16+15       0.0278      0.10  qQ        |         |         |         |
16+20       0.0282      0.07  qQ        |         |         |         |
16+25       0.0286      0.08  qQ        |         |         |         |
16+30       0.0290      0.08  qQ        |         |         |         |
16+35       0.0140      0.04  Q         |         |         |         |
16+40       0.0040      0.01  Q         |         |         |         |
16+45       0.0025      0.01  Q         |         |         |         |
16+50       0.0029      0.01  Q         |         |         |         |
16+55       0.0033      0.01  Q         |         |         |         |
17+ 0       0.0037      0.01  Q         |         |         |         |
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17+ 5	0.0350	0.08	qQ				
17+10	0.0563	0.14	|qQ				
17+15	0.0605	0.16	|qQ				
17+20	0.0609	0.16	|qQ				
17+25	0.0612	0.16	|qQ				
17+30	0.0616	0.16	|qQ				
17+35	0.0620	0.16	|qQ				
17+40	0.0624	0.17	|qQ				
17+45	0.0628	0.17	|qQ				
17+50	0.0477	0.13	q Q				
17+55	0.0376	0.10	qQ				
18+ 0	0.0361	0.10	qQ				
18+ 5	0.0365	0.10	qQ				
18+10	0.0369	0.10	qQ				
18+15	0.0372	0.10	qQ				
18+20	0.0376	0.10	qQ				
18+25	0.0380	0.10	qQ				
18+30	0.0383	0.10	qQ				
18+35	0.0232	0.07	qQ				
18+40	0.0131	0.04	Q				
18+45	0.0116	0.03	Q				
18+50	0.0305	0.07	qQ				
18+55	0.0433	0.11	qQ				
19+ 0	0.0455	0.12	q Q				
19+ 5	0.0275	0.08	qQ				
19+10	0.0155	0.04	Q				
19+15	0.0136	0.04	Q				
19+20	0.0294	0.07	qQ				
19+25	0.0402	0.10	qQ				
19+30	0.0424	0.11	qQ				
19+35	0.0272	0.08	qQ				
19+40	0.0171	0.05	Q				
19+45	0.0155	0.04	Q				
19+50	0.0323	0.08	qQ				
19+55	0.0435	0.11	q Q				
20+ 0	0.0455	0.12	q Q				
20+ 5	0.0296	0.08	qQ				
20+10	0.0190	0.05	Q				
20+15	0.0173	0.05	Q				
20+20	0.0176	0.05	Q				
20+25	0.0179	0.05	Q				
20+30	0.0182	0.05	Q				
20+35	0.0184	0.05	Q				
20+40	0.0187	0.05	Q				
20+45	0.0190	0.05	Q				
20+50	0.0338	0.08	qQ				
20+55	0.0438	0.11	q Q				
21+ 0	0.0455	0.12	q Q				
21+ 5	0.0314	0.09	qQ				
21+10	0.0220	0.06	qQ				
21+15	0.0205	0.06	Q				
21+20	0.0345	0.09	qQ				
21+25	0.0439	0.11	q Q				
21+30	0.0455	0.12	q Q				
21+35	0.0322	0.09	qQ				
21+40	0.0233	0.06	qQ				
21+45	0.0219	0.06	qQ				
21+50	0.0351	0.09	qQ				
21+55	0.0440	0.11	q Q				
22+ 0	0.0455	0.12	q Q				
22+ 5	0.0329	0.09	qQ				
22+10	0.0245	0.07	qQ				
22+15	0.0231	0.06	qQ				

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   22+20       0.0356      0.09  qQ        |         |         |         |
   22+25       0.0440      0.11  q Q       |         |         |         |
   22+30       0.0455      0.12  q Q       |         |         |         |
   22+35       0.0455      0.12  q Q       |         |         |         |
   22+40       0.0455      0.12  q Q       |         |         |         |
   22+45       0.0455      0.12  q Q       |         |         |         |
   22+50       0.0455      0.12  q Q       |         |         |         |
   22+55       0.0455      0.12  q Q       |         |         |         |
   23+ 0       0.0455      0.12  q Q       |         |         |         |
   23+ 5       0.0455      0.12  q Q       |         |         |         |
   23+10       0.0455      0.12  q Q       |         |         |         |
   23+15       0.0455      0.12  q Q       |         |         |         |
   23+20       0.0455      0.12  q Q       |         |         |         |
   23+25       0.0455      0.12  q Q       |         |         |         |
   23+30       0.0455      0.12  q Q       |         |         |         |
   23+35       0.0455      0.12  q Q       |         |         |         |
   23+40       0.0455      0.12  q Q       |         |         |         |
   23+45       0.0455      0.12  q Q       |         |         |         |
   23+50       0.0455      0.12  q Q       |         |         |         |
   23+55       0.0455      0.12  q Q       |         |         |         |
   24+ 0       0.0455      0.12  q Q       |         |         |         |
   24+ 5       0.0202      0.06  qQ        |         |         |         |
   24+10       0.0030      0.01  Q         |         |         |         |
   24+15       0.0000      0.00  Q         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   291
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        2.241 (CFS)
                   Total volume =       1.100 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.000 to Point/Station      603.000
      **** RETARDING BASIN ROUTING ****
      ______________________________________________________________________

      Program computation of outflow v. depth




      CALCULATED OUTFLOW DATA AT DEPTH =    1.00(Ft.))

      Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
      Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
      Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
      flow capacity is being calculated using depth = diameter
      Depth above pipe =   1.00(Ft.)    Capacity =   0.39(CFS)

      Total outflow at this depth =      0.39(CFS)


      CALCULATED OUTFLOW DATA AT DEPTH =    2.50(Ft.))
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```
Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   2.50(Ft.)    Capacity =   0.39(CFS)

Total outflow at this depth =      0.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    3.50(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   3.50(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   0.50(Ft.)    Capacity =  10.00(CFS)

Total outflow at this depth =     10.39(CFS)


CALCULATED OUTFLOW DATA AT DEPTH =    4.00(Ft.))

Free outlet pipe flow:  Pipe Diameter =     0.33(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Note: Depth of   0.33(Ft.) is greater than diameter of pipe,
flow capacity is being calculated using depth = diameter
Depth above pipe =   4.00(Ft.)    Capacity =   0.39(CFS)


Free outlet pipe flow:  Pipe Diameter =     1.50(Ft.)
Capacity = 8 * Pipe area * depth ^ 0.5(Using feet as units)
Depth above pipe =   1.00(Ft.)    Capacity =  14.14(CFS)

Total outflow at this depth =     14.53(CFS)

--------------------------------------------------------------------
Total number of inflow hydrograph intervals = 291
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
--------------------------------------------------------------------
--------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
----------------------------------------------------------------------
--------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
----------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   1.000      0.103      0.393      0.102        0.104
   2.500      0.219      0.393      0.218        0.220
   3.500      0.382     10.390      0.346        0.418
   4.000      0.460     14.530      0.410        0.510
--------------------------------------------------------------------
             Hydrograph Detention Basin Routing
----------------------------------------------------------------------
```

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 0.6 1.12 1.68 2.24	Depth (Ft.)
0.083	0.06	0.00	0.000	O	0.00
0.167	0.11	0.00	0.001	OI	0.01
0.250	0.12	0.01	0.002	OI	0.01
0.333	0.15	0.01	0.002	O I	0.02
0.417	0.17	0.01	0.003	O I	0.03
0.500	0.18	0.02	0.005	O I	0.04
0.583	0.18	0.02	0.006	O I	0.05
0.667	0.18	0.03	0.007	O I	0.07
0.750	0.18	0.03	0.008	O I	0.08
0.833	0.21	0.03	0.009	O I	0.09
0.917	0.24	0.04	0.010	O I	0.10
1.000	0.24	0.04	0.012	O I	0.11
1.083	0.21	0.05	0.013	O I	0.12
1.167	0.19	0.05	0.014	O I	0.13
1.250	0.18	0.06	0.015	O I	0.14
1.333	0.18	0.06	0.016	O I	0.15
1.417	0.18	0.06	0.016	O I	0.16
1.500	0.18	0.07	0.017	O I	0.17
1.583	0.18	0.07	0.018	O I	0.17
1.667	0.18	0.07	0.019	|OI	0.18
1.750	0.18	0.07	0.019	|OI	0.19
1.833	0.21	0.08	0.020	|O I	0.20
1.917	0.24	0.08	0.021	|O I	0.21
2.000	0.24	0.09	0.022	|O I	0.22
2.083	0.24	0.09	0.023	|O I	0.23
2.167	0.24	0.09	0.024	|O I	0.24
2.250	0.24	0.10	0.025	|O I	0.25
2.333	0.24	0.10	0.026	|O I	0.26
2.417	0.24	0.10	0.027	|O I	0.27
2.500	0.24	0.11	0.028	|O I	0.28
2.583	0.27	0.11	0.029	|O I	0.28
2.667	0.30	0.12	0.031	|O I	0.30
2.750	0.30	0.12	0.032	|O I	0.31
2.833	0.30	0.13	0.033	|O I	0.32
2.917	0.30	0.13	0.034	|O I	0.33
3.000	0.30	0.13	0.035	|O I	0.34
3.083	0.30	0.14	0.036	|O I	0.35
3.167	0.30	0.14	0.038	| O I	0.36
3.250	0.30	0.15	0.039	| O I	0.38
3.333	0.30	0.15	0.040	| O I	0.39
3.417	0.30	0.16	0.041	| O I	0.40
3.500	0.30	0.16	0.042	| O I	0.40
3.583	0.30	0.16	0.043	| O I	0.41
3.667	0.30	0.17	0.044	| O I	0.42
3.750	0.30	0.17	0.045	| O I	0.43
3.833	0.33	0.17	0.046	| O I	0.44
3.917	0.36	0.18	0.047	| O I	0.45
4.000	0.36	0.18	0.048	| O I	0.47
4.083	0.36	0.19	0.049	| O I	0.48
4.167	0.36	0.19	0.050	| O I	0.49
4.250	0.19	0.19	0.051	| O	0.49
4.333	0.08	0.19	0.050	|IO	0.49
4.417	0.08	0.19	0.050	|IO	0.48
4.500	0.08	0.19	0.049	|IO	0.47
4.583	0.08	0.18	0.048	|IO	0.47
4.667	0.08	0.18	0.047	|IO	0.46
4.750	0.08	0.18	0.047	|IO	0.45
4.833	0.12	0.18	0.046	|IO	0.45

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 4.917    0.15    0.18      0.046  | O     |       |       |       |     0.45
 5.000    0.16    0.18      0.046  | O     |       |       |       |     0.45
 5.083    0.09    0.17      0.046  |IO     |       |       |       |     0.44
 5.167    0.04    0.17      0.045  I O     |       |       |       |     0.44
 5.250    0.03    0.17      0.044  I O     |       |       |       |     0.43
 5.333    0.06    0.16      0.043  I O     |       |       |       |     0.42
 5.417    0.09    0.16      0.042  |IO     |       |       |       |     0.41
 5.500    0.10    0.16      0.042  |IO     |       |       |       |     0.41
 5.583    0.14    0.16      0.042  |IO     |       |       |       |     0.41
 5.667    0.17    0.16      0.042  | O     |       |       |       |     0.40
 5.750    0.18    0.16      0.042  | O     |       |       |       |     0.41
 5.833    0.18    0.16      0.042  | O     |       |       |       |     0.41
 5.917    0.18    0.16      0.042  | O     |       |       |       |     0.41
 6.000    0.19    0.16      0.042  | O     |       |       |       |     0.41
 6.083    0.22    0.16      0.043  | OI    |       |       |       |     0.41
 6.167    0.26    0.16      0.043  | OI    |       |       |       |     0.42
 6.250    0.26    0.17      0.044  | OI    |       |       |       |     0.42
 6.333    0.27    0.17      0.044  | OI    |       |       |       |     0.43
 6.417    0.27    0.17      0.045  | OI    |       |       |       |     0.44
 6.500    0.27    0.17      0.046  | OI    |       |       |       |     0.44
 6.583    0.31    0.18      0.047  | O I   |       |       |       |     0.45
 6.667    0.34    0.18      0.047  | O I   |       |       |       |     0.46
 6.750    0.35    0.19      0.049  | O I   |       |       |       |     0.47
 6.833    0.35    0.19      0.050  | O  I  |       |       |       |     0.48
 6.917    0.35    0.19      0.051  | O  I  |       |       |       |     0.49
 7.000    0.35    0.20      0.052  | O  I  |       |       |       |     0.50
 7.083    0.36    0.20      0.053  | O  I  |       |       |       |     0.51
 7.167    0.36    0.21      0.054  | O  I  |       |       |       |     0.52
 7.250    0.36    0.21      0.055  | O  I  |       |       |       |     0.53
 7.333    0.40    0.21      0.056  |  O I  |       |       |       |     0.55
 7.417    0.43    0.22      0.058  |  O  I |       |       |       |     0.56
 7.500    0.44    0.23      0.059  |  O  I |       |       |       |     0.57
 7.583    0.48    0.23      0.061  |  O  I |       |       |       |     0.59
 7.667    0.51    0.24      0.062  |  O   I|       |       |       |     0.61
 7.750    0.51    0.24      0.064  |  O   I|       |       |       |     0.62
 7.833    0.55    0.25      0.066  |  O   I|       |       |       |     0.64
 7.917    0.59    0.26      0.068  |  O    I       |       |       |     0.66
 8.000    0.59    0.27      0.071  |  O    I       |       |       |     0.69
 8.083    0.67    0.28      0.073  |  O    |I      |       |       |     0.71
 8.167    0.73    0.29      0.076  |   O   | I     |       |       |     0.74
 8.250    0.74    0.30      0.079  |   O   | I     |       |       |     0.77
 8.333    0.75    0.31      0.082  |   O   | I     |       |       |     0.80
 8.417    0.75    0.32      0.085  |   O   | I     |       |       |     0.82
 8.500    0.75    0.34      0.088  |   O   | I     |       |       |     0.85
 8.583    0.79    0.35      0.091  |   O   |  I    |       |       |     0.88
 8.667    0.82    0.36      0.094  |    O  |  I    |       |       |     0.91
 8.750    0.83    0.37      0.097  |    O  |  I    |       |       |     0.94
 8.833    0.87    0.38      0.100  |    O  |   I   |       |       |     0.97
 8.917    0.90    0.39      0.104  |    O  |   I   |       |       |     1.01
 9.000    0.91    0.39      0.107  |    O  |   I   |       |       |     1.06
 9.083    0.98    0.39      0.111  |    O  |     I |       |       |     1.10
 9.167    1.05    0.39      0.115  |    O  |     I |       |       |     1.16
 9.250    1.06    0.39      0.120  |    O  |      I|       |       |     1.22
 9.333    1.10    0.39      0.125  |    O  |      I|       |       |     1.28
 9.417    1.13    0.39      0.130  |    O  |       I       |       |     1.34
 9.500    1.14    0.39      0.135  |    O  |       I       |       |     1.41
 9.583    1.18    0.39      0.140  |    O  |       I       |       |     1.48
 9.667    1.21    0.39      0.146  |    O  |       |I      |       |     1.55
 9.750    1.22    0.39      0.151  |    O  |       |I      |       |     1.62
 9.833    1.26    0.39      0.157  |    O  |       |I      |       |     1.70
 9.917    1.29    0.39      0.163  |    O  |       | I     |       |     1.78
10.000    1.30    0.39      0.169  |    O  |       | I     |       |     1.86
10.083    1.05    0.39      0.175  |    O  |     I |       |       |     1.93
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10.167    0.84    0.39      0.178  |    O  |  I    |       |       |     1.97
10.250    0.80    0.39      0.181  |    O  |  I    |       |       |     2.01
10.333    0.79    0.39      0.184  |    O  |  I    |       |       |     2.05
10.417    0.79    0.39      0.187  |    O  |  I    |       |       |     2.08
10.500    0.79    0.39      0.189  |    O  |  I    |       |       |     2.12
10.583    0.97    0.39      0.193  |    O  |    I  |       |       |     2.16
10.667    1.12    0.39      0.197  |    O  |       I       |       |     2.22
10.750    1.15    0.39      0.202  |    O  |       I       |       |     2.29
10.833    1.16    0.39      0.208  |    O  |       I       |       |     2.35
10.917    1.17    0.39      0.213  |    O  |       I       |       |     2.42
11.000    1.17    0.39      0.218  |    O  |       I       |       |     2.49
11.083    1.13    0.63      0.223  |       O       I       |       |     2.52
11.167    1.10    0.80      0.226  |       |  O   I|       |       |     2.54
11.250    1.10    0.91      0.227  |       |   O  I|       |       |     2.55
11.333    1.10    0.97      0.228  |       |    O I|       |       |     2.56
11.417    1.10    1.02      0.229  |       |     OI|       |       |     2.56
11.500    1.10    1.05      0.230  |       |     OI|       |       |     2.57
11.583    1.03    1.05      0.230  |       |     IO|       |       |     2.57
11.667    0.97    1.04      0.229  |       |    IO |       |       |     2.56
11.750    0.96    1.01      0.229  |       |    IO |       |       |     2.56
11.833    1.00    1.00      0.229  |       |     O |       |       |     2.56
11.917    1.03    1.01      0.229  |       |     O |       |       |     2.56
12.000    1.04    1.02      0.229  |       |     O |       |       |     2.56
12.083    1.29    1.07      0.230  |       |      O| I     |       |     2.57
12.167    1.50    1.18      0.232  |       |       O    I  |       |     2.58
12.250    1.55    1.30      0.234  |       |       | O   I |       |     2.59
12.333    1.60    1.40      0.235  |       |       |  O  I |       |     2.60
12.417    1.63    1.47      0.237  |       |       |   O  I|       |     2.61
12.500    1.63    1.53      0.237  |       |       |    O I|       |     2.61
12.583    1.71    1.58      0.238  |       |       |     O I       |     2.62
12.667    1.77    1.63      0.239  |       |       |      O|I      |     2.62
12.750    1.78    1.68      0.240  |       |       |       OI      |     2.63
12.833    1.82    1.73      0.241  |       |       |       O I     |     2.63
12.917    1.86    1.77      0.241  |       |       |       |OI     |     2.64
13.000    1.86    1.80      0.242  |       |       |       |OI     |     2.64
13.083    2.05    1.85      0.243  |       |       |       | O  I  |     2.65
13.167    2.20    1.95      0.244  |       |       |       |  O   I|     2.66
13.250    2.23    2.04      0.246  |       |       |       |    O I|     2.66
13.333    2.24    2.11      0.247  |       |       |       |     OI|     2.67
13.417    2.24    2.15      0.248  |       |       |       |     OI|     2.68
13.500    2.24    2.18      0.248  |       |       |       |      OI     2.68
13.583    1.85    2.13      0.247  |       |       |       | I   O |     2.67
13.667    1.52    1.98      0.245  |       |       |    I  |   O   |     2.66
13.750    1.46    1.81      0.242  |       |       |   I   |O      |     2.64
13.833    1.44    1.68      0.240  |       |       |   I  O|       |     2.63
13.917    1.44    1.60      0.239  |       |       |   I O |       |     2.62
14.000    1.44    1.54      0.238  |       |       |   I O |       |     2.61
14.083    1.58    1.53      0.238  |       |       |    OI |       |     2.61
14.167    1.71    1.57      0.238  |       |       |     O I       |     2.62
14.250    1.73    1.62      0.239  |       |       |      OI       |     2.62
14.333    1.70    1.66      0.240  |       |       |      OI       |     2.63
14.417    1.67    1.67      0.240  |       |       |      O|       |     2.63
14.500    1.67    1.67      0.240  |       |       |      O|       |     2.63
14.583    1.67    1.67      0.240  |       |       |      O|       |     2.63
14.667    1.67    1.67      0.240  |       |       |      O|       |     2.63
14.750    1.67    1.67      0.240  |       |       |      O|       |     2.63
14.833    1.64    1.66      0.240  |       |       |      O|       |     2.63
14.917    1.61    1.65      0.239  |       |       |     IO|       |     2.63
15.000    1.60    1.63      0.239  |       |       |     IO|       |     2.62
15.083    1.57    1.62      0.239  |       |       |     IO|       |     2.62
15.167    1.54    1.59      0.239  |       |       |    IO |       |     2.62
15.250    1.53    1.57      0.238  |       |       |    IO |       |     2.62
15.333    1.50    1.55      0.238  |       |       |    IO |       |     2.62
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15.417    1.47    1.53      0.238  |        |        |   IO  |        |     2.61
15.500    1.46    1.51      0.237  |        |        |   IO  |        |     2.61
15.583    1.32    1.47      0.237  |        |        | I O   |        |     2.61
15.667    1.20    1.39      0.235  |        |        |I O    |        |     2.60
15.750    1.18    1.32      0.234  |        |        I O     |        |     2.59
15.833    1.17    1.27      0.233  |        |        I O     |        |     2.59
15.917    1.17    1.24      0.233  |        |        IO      |        |     2.58
16.000    1.17    1.21      0.232  |        |        IO      |        |     2.58
16.083    0.64    1.11      0.231  |        |I     O|        |        |     2.57
16.167    0.19    0.86      0.227  | I      |   O    |        |        |     2.55
16.250    0.10    0.61      0.223  |I      O        |        |        |     2.52
16.333    0.07    0.43      0.220  |I    O |        |        |        |     2.50
16.417    0.08    0.39      0.217  |I   O  |        |        |        |     2.48
16.500    0.08    0.39      0.215  |I   O  |        |        |        |     2.45
16.583    0.04    0.39      0.213  I    O  |        |        |        |     2.42
16.667    0.01    0.39      0.210  I    O  |        |        |        |     2.39
16.750    0.01    0.39      0.208  I    O  |        |        |        |     2.35
16.833    0.01    0.39      0.205  I    O  |        |        |        |     2.32
16.917    0.01    0.39      0.202  I    O  |        |        |        |     2.28
17.000    0.01    0.39      0.200  I    O  |        |        |        |     2.25
17.083    0.08    0.39      0.197  |I   O  |        |        |        |     2.22
17.167    0.14    0.39      0.195  | I  O  |        |        |        |     2.19
17.250    0.16    0.39      0.194  | I  O  |        |        |        |     2.17
17.333    0.16    0.39      0.192  | I  O  |        |        |        |     2.15
17.417    0.16    0.39      0.191  | I  O  |        |        |        |     2.13
17.500    0.16    0.39      0.189  | I  O  |        |        |        |     2.11
17.583    0.16    0.39      0.187  | I  O  |        |        |        |     2.09
17.667    0.17    0.39      0.186  | I  O  |        |        |        |     2.07
17.750    0.17    0.39      0.184  | I  O  |        |        |        |     2.05
17.833    0.13    0.39      0.183  |I   O  |        |        |        |     2.03
17.917    0.10    0.39      0.181  |I   O  |        |        |        |     2.00
18.000    0.10    0.39      0.179  |I   O  |        |        |        |     1.98
18.083    0.10    0.39      0.177  |I   O  |        |        |        |     1.95
18.167    0.10    0.39      0.175  |I   O  |        |        |        |     1.92
18.250    0.10    0.39      0.172  |I   O  |        |        |        |     1.90
18.333    0.10    0.39      0.170  |I   O  |        |        |        |     1.87
18.417    0.10    0.39      0.168  |I   O  |        |        |        |     1.85
18.500    0.10    0.39      0.166  |I   O  |        |        |        |     1.82
18.583    0.07    0.39      0.164  I    O  |        |        |        |     1.79
18.667    0.04    0.39      0.162  I    O  |        |        |        |     1.76
18.750    0.03    0.39      0.160  I    O  |        |        |        |     1.73
18.833    0.07    0.39      0.157  |I   O  |        |        |        |     1.70
18.917    0.11    0.39      0.155  |I   O  |        |        |        |     1.67
19.000    0.12    0.39      0.153  |I   O  |        |        |        |     1.65
19.083    0.08    0.39      0.151  |I   O  |        |        |        |     1.62
19.167    0.04    0.39      0.149  I    O  |        |        |        |     1.59
19.250    0.04    0.39      0.146  I    O  |        |        |        |     1.56
19.333    0.07    0.39      0.144  |I   O  |        |        |        |     1.53
19.417    0.10    0.39      0.142  |I   O  |        |        |        |     1.50
19.500    0.11    0.39      0.140  |I   O  |        |        |        |     1.48
19.583    0.08    0.39      0.138  |I   O  |        |        |        |     1.45
19.667    0.05    0.39      0.136  I    O  |        |        |        |     1.42
19.750    0.04    0.39      0.133  I    O  |        |        |        |     1.39
19.833    0.08    0.39      0.131  |I   O  |        |        |        |     1.36
19.917    0.11    0.39      0.129  |I   O  |        |        |        |     1.34
20.000    0.12    0.39      0.127  |I   O  |        |        |        |     1.31
20.083    0.08    0.39      0.125  |I   O  |        |        |        |     1.29
20.167    0.05    0.39      0.123  I    O  |        |        |        |     1.26
20.250    0.05    0.39      0.120  I    O  |        |        |        |     1.23
20.333    0.05    0.39      0.118  I    O  |        |        |        |     1.20
20.417    0.05    0.39      0.116  I    O  |        |        |        |     1.16
20.500    0.05    0.39      0.113  I    O  |        |        |        |     1.13
20.583    0.05    0.39      0.111  I    O  |        |        |        |     1.10
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20.667    0.05    0.39      0.109  I    O  |        |        |        |     1.07
20.750    0.05    0.39      0.106  I    O  |        |        |        |     1.04
20.833    0.08    0.39      0.104  |I   O  |        |        |        |     1.01
20.917    0.11    0.39      0.102  |I   O  |        |        |        |     0.99
21.000    0.12    0.38      0.100  |I   O  |        |        |        |     0.97
21.083    0.09    0.37      0.098  |I   O  |        |        |        |     0.95
21.167    0.06    0.37      0.096  I    O  |        |        |        |     0.93
21.250    0.06    0.36      0.094  I    O  |        |        |        |     0.91
21.333    0.09    0.35      0.092  |I   O  |        |        |        |     0.89
21.417    0.11    0.35      0.090  |I  O   |        |        |        |     0.88
21.500    0.12    0.34      0.089  |I  O   |        |        |        |     0.86
21.583    0.09    0.33      0.087  |I  O   |        |        |        |     0.85
21.667    0.06    0.33      0.086  I   O   |        |        |        |     0.83
21.750    0.06    0.32      0.084  I   O   |        |        |        |     0.81
21.833    0.09    0.31      0.082  |I  O   |        |        |        |     0.80
21.917    0.11    0.31      0.081  |I  O   |        |        |        |     0.78
22.000    0.12    0.30      0.079  |I  O   |        |        |        |     0.77
22.083    0.09    0.30      0.078  |I  O   |        |        |        |     0.76
22.167    0.07    0.29      0.076  I   O   |        |        |        |     0.74
22.250    0.06    0.29      0.075  I   O   |        |        |        |     0.73
22.333    0.09    0.28      0.074  |I  O   |        |        |        |     0.71
22.417    0.11    0.28      0.072  |I O    |        |        |        |     0.70
22.500    0.12    0.27      0.071  |I O    |        |        |        |     0.69
22.583    0.12    0.27      0.070  |I O    |        |        |        |     0.68
22.667    0.12    0.26      0.069  |I O    |        |        |        |     0.67
22.750    0.12    0.26      0.068  |I O    |        |        |        |     0.66
22.833    0.12    0.26      0.067  |I O    |        |        |        |     0.65
22.917    0.12    0.25      0.066  |I O    |        |        |        |     0.64
23.000    0.12    0.25      0.065  |I O    |        |        |        |     0.64
23.083    0.12    0.25      0.065  |I O    |        |        |        |     0.63
23.167    0.12    0.24      0.064  |I O    |        |        |        |     0.62
23.250    0.12    0.24      0.063  |I O    |        |        |        |     0.61
23.333    0.12    0.24      0.062  |I O    |        |        |        |     0.60
23.417    0.12    0.23      0.061  |I O    |        |        |        |     0.60
23.500    0.12    0.23      0.061  |I O    |        |        |        |     0.59
23.583    0.12    0.23      0.060  |I O    |        |        |        |     0.58
23.667    0.12    0.23      0.059  |I O    |        |        |        |     0.57
23.750    0.12    0.22      0.058  |I O    |        |        |        |     0.57
23.833    0.12    0.22      0.058  |I O    |        |        |        |     0.56
23.917    0.12    0.22      0.057  |I O    |        |        |        |     0.55
24.000    0.12    0.21      0.056  |I O    |        |        |        |     0.55
24.083    0.06    0.21      0.055  I  O    |        |        |        |     0.54
24.167    0.01    0.21      0.054  I O     |        |        |        |     0.53
24.250    0.00    0.20      0.053  I O     |        |        |        |     0.51
24.333    0.00    0.20      0.052  I O     |        |        |        |     0.50
24.417    0.00    0.19      0.050  I O     |        |        |        |     0.49
24.500    0.00    0.19      0.049  I O     |        |        |        |     0.47
24.583    0.00    0.18      0.048  I O     |        |        |        |     0.46
24.667    0.00    0.18      0.046  I O     |        |        |        |     0.45
24.750    0.00    0.17      0.045  I O     |        |        |        |     0.44
24.833    0.00    0.17      0.044  I O     |        |        |        |     0.43
24.917    0.00    0.16      0.043  I O     |        |        |        |     0.42
25.000    0.00    0.16      0.042  I O     |        |        |        |     0.41
25.083    0.00    0.16      0.041  I O     |        |        |        |     0.40
25.167    0.00    0.15      0.040  I O     |        |        |        |     0.38
25.250    0.00    0.15      0.039  I O     |        |        |        |     0.37
25.333    0.00    0.14      0.038  I O     |        |        |        |     0.37
25.417    0.00    0.14      0.037  IO      |        |        |        |     0.36
25.500    0.00    0.14      0.036  IO      |        |        |        |     0.35
25.583    0.00    0.13      0.035  IO      |        |        |        |     0.34
25.667    0.00    0.13      0.034  IO      |        |        |        |     0.33
25.750    0.00    0.13      0.033  IO      |        |        |        |     0.32
25.833    0.00    0.12      0.032  IO      |        |        |        |     0.31
```

```
25.917    0.00    0.12      0.031  IO      |       |       |       |     0.30
26.000    0.00    0.12      0.030  IO      |       |       |       |     0.30
26.083    0.00    0.11      0.030  IO      |       |       |       |     0.29
26.167    0.00    0.11      0.029  IO      |       |       |       |     0.28
26.250    0.00    0.11      0.028  IO      |       |       |       |     0.27
26.333    0.00    0.10      0.027  IO      |       |       |       |     0.27
26.417    0.00    0.10      0.027  IO      |       |       |       |     0.26
26.500    0.00    0.10      0.026  IO      |       |       |       |     0.25


      Remaining water in basin =    0.03 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                   Number of intervals =   318
                   Time interval =    5.0 (Min.)
                   Maximum/Peak flow rate =        2.184 (CFS)
                   Total volume =       1.075 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.100 to Point/Station      603.200
      **** STREAM ROUTING SCS CONVEX METHOD ****
      ______________________________________________________________________
      HYDROGRAPH STREAM ROUTING DATA:
      Length of stream =    210.00 (Ft.)
      Elevation difference =    1.05 (Ft.)
      Slope of channel =  0.005000 (Vert/Horiz)
      Channel type - Pipe


      Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using mean flow rate of hydrograph
      Required pipe flow  =     0.609(CFS)
      Nearest computed pipe diameter  =      9.00(In.)
      Calculated individual pipe flow  =     0.609(CFS)
      Normal flow depth in pipe =    4.61(In.)
      Flow top width inside pipe =    9.00(In.)
      Critical Depth =    0.35(Ft.)
      Pipe flow velocity =      2.68(Ft/s)
      Travel time through pipe =    1.31 min.


      Pipe length  =   210.00(Ft.)   Elevation difference =   1.05(Ft.)
      Manning's N = 0.013   No. of pipes = 1
      Pipe evaluation using maximum flow rate of hydrograph
      Required pipe flow  =     2.184(CFS)
      Nearest computed pipe diameter  =     12.00(In.)
      Calculated individual pipe flow  =     2.184(CFS)
      Normal flow depth in pipe =    8.63(In.)
      Flow top width inside pipe =   10.79(In.)
      Critical Depth =    0.63(Ft.)
      Pipe flow velocity =      3.61(Ft/s)
      Travel time through pipe =    0.97 min.
```

```
********************** SCS CONVEX CHANNEL ROUTING *********************
Convex method of stream routing  data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
         where c* = 1 - (1-c)^e and dt = c(length)/velocity
         c(v/v+1.7) =   0.6799   Travel time =   0.97 (min.)
       dt*(unit time interval) =   5.00(min.),  e=   5.3914
       dt(routing time-step) =   0.66 (min.),   c* =   0.9978

Output hydrograph delayed by 0  unit time increments


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  P R I N T  O F  S T O R M
               R u n o f f     H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   5   Minute intervals (CFS)

----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0        0.5       1.1       1.6       2.2
----------------------------------------------------------------------
  0+ 5       0.0007      0.00  O         |         |         |         |
  0+10       0.0026      0.00  O         |         |         |         |
  0+15       0.0054      0.01  O         |         |         |         |
  0+20       0.0087      0.01  O         |         |         |         |
  0+25       0.0125      0.01  O         |         |         |         |
  0+30       0.0168      0.02  O         |         |         |         |
  0+35       0.0210      0.02  O         |         |         |         |
  0+40       0.0252      0.03  O         |         |         |         |
  0+45       0.0292      0.03  O         |         |         |         |
  0+50       0.0335      0.03  O         |         |         |         |
  0+55       0.0383      0.04  O         |         |         |         |
  1+ 0       0.0434      0.04  O         |         |         |         |
  1+ 5       0.0482      0.05  O         |         |         |         |
  1+10       0.0522      0.05  O         |         |         |         |
  1+15       0.0557      0.06  |O        |         |         |         |
  1+20       0.0590      0.06  |O        |         |         |         |
  1+25       0.0622      0.06  |O        |         |         |         |
  1+30       0.0652      0.07  |O        |         |         |         |
  1+35       0.0682      0.07  |O        |         |         |         |
  1+40       0.0712      0.07  |O        |         |         |         |
  1+45       0.0740      0.07  |O        |         |         |         |
  1+50       0.0771      0.08  |O        |         |         |         |
  1+55       0.0808      0.08  |O        |         |         |         |
  2+ 0       0.0848      0.09  |O        |         |         |         |
  2+ 5       0.0889      0.09  |O        |         |         |         |
  2+10       0.0928      0.09  |O        |         |         |         |
  2+15       0.0967      0.10  |O        |         |         |         |
  2+20       0.1004      0.10  |O        |         |         |         |
  2+25       0.1041      0.10  |O        |         |         |         |
  2+30       0.1077      0.11  |O        |         |         |         |
  2+35       0.1115      0.11  | O       |         |         |         |
  2+40       0.1158      0.12  | O       |         |         |         |
  2+45       0.1205      0.12  | O       |         |         |         |
  2+50       0.1252      0.13  | O       |         |         |         |
  2+55       0.1297      0.13  | O       |         |         |         |
  3+ 0       0.1342      0.13  | O       |         |         |         |
  3+ 5       0.1386      0.14  | O       |         |         |         |
  3+10       0.1428      0.14  | O       |         |         |         |
  3+15       0.1469      0.15  | O       |         |         |         |
  3+20       0.1509      0.15  | O       |         |         |         |
  3+25       0.1548      0.16  | O       |         |         |         |
```

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3+30       0.1587      0.16  | O       |         |         |         |
3+35       0.1624      0.16  | O       |         |         |         |
3+40       0.1660      0.17  |  O      |         |         |         |
3+45       0.1695      0.17  |  O      |         |         |         |
3+50       0.1733      0.17  |  O      |         |         |         |
3+55       0.1776      0.18  |  O      |         |         |         |
4+ 0       0.1822      0.18  |  O      |         |         |         |
4+ 5       0.1869      0.19  |  O      |         |         |         |
4+10       0.1914      0.19  |  O      |         |         |         |
4+15       0.1939      0.19  |  O      |         |         |         |
4+20       0.1927      0.19  |  O      |         |         |         |
4+25       0.1899      0.19  |  O      |         |         |         |
4+30       0.1870      0.19  |  O      |         |         |         |
4+35       0.1842      0.18  |  O      |         |         |         |
4+40       0.1815      0.18  |  O      |         |         |         |
4+45       0.1790      0.18  |  O      |         |         |         |
4+50       0.1770      0.18  |  O      |         |         |         |
4+55       0.1759      0.18  |  O      |         |         |         |
5+ 0       0.1753      0.18  |  O      |         |         |         |
5+ 5       0.1742      0.17  |  O      |         |         |         |
5+10       0.1716      0.17  |  O      |         |         |         |
5+15       0.1681      0.17  |  O      |         |         |         |
5+20       0.1648      0.16  |  O      |         |         |         |
5+25       0.1623      0.16  | O       |         |         |         |
5+30       0.1606      0.16  | O       |         |         |         |
5+35       0.1594      0.16  | O       |         |         |         |
5+40       0.1592      0.16  | O       |         |         |         |
5+45       0.1595      0.16  | O       |         |         |         |
5+50       0.1600      0.16  | O       |         |         |         |
5+55       0.1606      0.16  | O       |         |         |         |
6+ 0       0.1612      0.16  | O       |         |         |         |
6+ 5       0.1623      0.16  | O       |         |         |         |
6+10       0.1642      0.16  |  O      |         |         |         |
6+15       0.1666      0.17  |  O      |         |         |         |
6+20       0.1691      0.17  |  O      |         |         |         |
6+25       0.1716      0.17  |  O      |         |         |         |
6+30       0.1742      0.17  |  O      |         |         |         |
6+35       0.1771      0.18  |  O      |         |         |         |
6+40       0.1808      0.18  |  O      |         |         |         |
6+45       0.1849      0.19  |  O      |         |         |         |
6+50       0.1891      0.19  |  O      |         |         |         |
6+55       0.1933      0.19  |  O      |         |         |         |
7+ 0       0.1975      0.20  |  O      |         |         |         |
7+ 5       0.2016      0.20  |  O      |         |         |         |
7+10       0.2056      0.21  |  O      |         |         |         |
7+15       0.2095      0.21  |  O      |         |         |         |
7+20       0.2139      0.21  |  O      |         |         |         |
7+25       0.2189      0.22  |   O     |         |         |         |
7+30       0.2244      0.23  |   O     |         |         |         |
7+35       0.2303      0.23  |   O     |         |         |         |
7+40       0.2370      0.24  |   O     |         |         |         |
7+45       0.2440      0.24  |   O     |         |         |         |
7+50       0.2515      0.25  |   O     |         |         |         |
7+55       0.2596      0.26  |   O     |         |         |         |
8+ 0       0.2681      0.27  |   O     |         |         |         |
8+ 5       0.2774      0.28  |    O    |         |         |         |
8+10       0.2881      0.29  |    O    |         |         |         |
8+15       0.2996      0.30  |    O    |         |         |         |
8+20       0.3112      0.31  |    O    |         |         |         |
8+25       0.3226      0.32  |    O    |         |         |         |
8+30       0.3337      0.34  |     O   |         |         |         |
8+35       0.3450      0.35  |     O   |         |         |         |
8+40       0.3569      0.36  |     O   |         |         |         |
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 8+45       0.3689      0.37  |     O   |         |         |         |
 8+50       0.3813      0.38  |     OI  |         |         |         |
 8+55       0.3917      0.39  |      O  |         |         |         |
 9+ 0       0.3931      0.39  |      O  |         |         |         |
 9+ 5       0.3931      0.39  |      O  |         |         |         |
 9+10       0.3931      0.39  |      O  |         |         |         |
 9+15       0.3931      0.39  |      O  |         |         |         |
 9+20       0.3931      0.39  |      O  |         |         |         |
 9+25       0.3931      0.39  |      O  |         |         |         |
 9+30       0.3931      0.39  |      O  |         |         |         |
 9+35       0.3931      0.39  |      O  |         |         |         |
 9+40       0.3931      0.39  |      O  |         |         |         |
 9+45       0.3931      0.39  |      O  |         |         |         |
 9+50       0.3931      0.39  |      O  |         |         |         |
 9+55       0.3931      0.39  |      O  |         |         |         |
10+ 0       0.3931      0.39  |      O  |         |         |         |
10+ 5       0.3931      0.39  |      O  |         |         |         |
10+10       0.3931      0.39  |      O  |         |         |         |
10+15       0.3931      0.39  |      O  |         |         |         |
10+20       0.3931      0.39  |      O  |         |         |         |
10+25       0.3931      0.39  |      O  |         |         |         |
10+30       0.3931      0.39  |      O  |         |         |         |
10+35       0.3931      0.39  |      O  |         |         |         |
10+40       0.3931      0.39  |      O  |         |         |         |
10+45       0.3931      0.39  |      O  |         |         |         |
10+50       0.3931      0.39  |      O  |         |         |         |
10+55       0.3931      0.39  |      O  |         |         |         |
11+ 0       0.3931      0.39  |      O  |         |         |         |
11+ 5       0.5969      0.63  |         OI        |         |         |
11+10       0.7766      0.80  |         |   O     |         |         |
11+15       0.8911      0.91  |         |     O   |         |         |
11+20       0.9642      0.97  |         |      O  |         |         |
11+25       1.0119      1.02  |         |       O |         |         |
11+30       1.0435      1.05  |         |        O|         |         |
11+35       1.0536      1.05  |         |        O|         |         |
11+40       1.0391      1.04  |         |       IO|         |         |
11+45       1.0163      1.01  |         |       O |         |         |
11+50       1.0034      1.00  |         |       O |         |         |
11+55       1.0055      1.01  |         |       O |         |         |
12+ 0       1.0142      1.02  |         |       O |         |         |
12+ 5       1.0604      1.07  |         |        O|         |         |
12+10       1.1671      1.18  |         |         |O        |         |
12+15       1.2858      1.30  |         |         |  O      |         |
12+20       1.3829      1.40  |         |         |    O    |         |
12+25       1.4606      1.47  |         |         |     O   |         |
12+30       1.5189      1.53  |         |         |      O  |         |
12+35       1.5702      1.58  |         |         |       O |         |
12+40       1.6262      1.63  |         |         |        O|         |
12+45       1.6771      1.68  |         |         |         O         |
12+50       1.7201      1.73  |         |         |         |O        |
12+55       1.7603      1.77  |         |         |         | O       |
13+ 0       1.7940      1.80  |         |         |         | O       |
13+ 5       1.8456      1.85  |         |         |         |  O      |
13+10       1.9342      1.95  |         |         |         |    O    |
13+15       2.0272      2.04  |         |         |         |      O  |
13+20       2.0981      2.11  |         |         |         |       O |
13+25       2.1470      2.15  |         |         |         |        O|
13+30       2.1795      2.18  |         |         |         |        OI
13+35       2.1413      2.13  |         |         |         |        O|
13+40       1.9979      1.98  |         |         |         |     O   |
13+45       1.8286      1.81  |         |         |         |  O      |
13+50       1.6970      1.68  |         |         |         IO        |
13+55       1.6069      1.60  |         |         |        O|         |
```

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14+ 0       1.5481      1.54  |         |         |       O |         |
14+ 5       1.5321      1.53  |         |         |       O |         |
14+10       1.5653      1.57  |         |         |       O |         |
14+15       1.6153      1.62  |         |         |        O|         |
14+20       1.6507      1.66  |         |         |         O         |
14+25       1.6652      1.67  |         |         |         O         |
14+30       1.6683      1.67  |         |         |         O         |
14+35       1.6687      1.67  |         |         |         O         |
14+40       1.6690      1.67  |         |         |         O         |
14+45       1.6696      1.67  |         |         |         O         |
14+50       1.6650      1.66  |         |         |         O         |
14+55       1.6516      1.65  |         |         |         O         |
15+ 0       1.6364      1.63  |         |         |        O|         |
15+ 5       1.6195      1.62  |         |         |        O|         |
15+10       1.5976      1.59  |         |         |        O|         |
15+15       1.5768      1.57  |         |         |       O |         |
15+20       1.5563      1.55  |         |         |       O |         |
15+25       1.5321      1.53  |         |         |       O |         |
15+30       1.5097      1.51  |         |         |      O  |         |
15+35       1.4719      1.47  |         |         |     O   |         |
15+40       1.4039      1.39  |         |         |    O    |         |
15+45       1.3322      1.32  |         |         |   O     |         |
15+50       1.2780      1.27  |         |         |  O      |         |
15+55       1.2413      1.24  |         |         | O       |         |
16+ 0       1.2177      1.21  |         |         | O       |         |
16+ 5       1.1211      1.11  |         |        O        |         |
16+10       0.8964      0.86  |         |    IO   |         |         |
16+15       0.6462      0.61  |         |O        |         |         |
16+20       0.4540      0.43  |      IO |         |         |         |
16+25       0.3980      0.39  |      O  |         |         |         |
16+30       0.3931      0.39  |      O  |         |         |         |
16+35       0.3931      0.39  |      O  |         |         |         |
16+40       0.3931      0.39  |      O  |         |         |         |
16+45       0.3931      0.39  |      O  |         |         |         |
16+50       0.3931      0.39  |      O  |         |         |         |
16+55       0.3931      0.39  |      O  |         |         |         |
17+ 0       0.3931      0.39  |      O  |         |         |         |
17+ 5       0.3931      0.39  |      O  |         |         |         |
17+10       0.3931      0.39  |      O  |         |         |         |
17+15       0.3931      0.39  |      O  |         |         |         |
17+20       0.3931      0.39  |      O  |         |         |         |
17+25       0.3931      0.39  |      O  |         |         |         |
17+30       0.3931      0.39  |      O  |         |         |         |
17+35       0.3931      0.39  |      O  |         |         |         |
17+40       0.3931      0.39  |      O  |         |         |         |
17+45       0.3931      0.39  |      O  |         |         |         |
17+50       0.3931      0.39  |      O  |         |         |         |
17+55       0.3931      0.39  |      O  |         |         |         |
18+ 0       0.3931      0.39  |      O  |         |         |         |
18+ 5       0.3931      0.39  |      O  |         |         |         |
18+10       0.3931      0.39  |      O  |         |         |         |
18+15       0.3931      0.39  |      O  |         |         |         |
18+20       0.3931      0.39  |      O  |         |         |         |
18+25       0.3931      0.39  |      O  |         |         |         |
18+30       0.3931      0.39  |      O  |         |         |         |
18+35       0.3931      0.39  |      O  |         |         |         |
18+40       0.3931      0.39  |      O  |         |         |         |
18+45       0.3931      0.39  |      O  |         |         |         |
18+50       0.3931      0.39  |      O  |         |         |         |
18+55       0.3931      0.39  |      O  |         |         |         |
19+ 0       0.3931      0.39  |      O  |         |         |         |
19+ 5       0.3931      0.39  |      O  |         |         |         |
19+10       0.3931      0.39  |      O  |         |         |         |
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19+15       0.3931      0.39  |      O  |         |         |         |
19+20       0.3931      0.39  |      O  |         |         |         |
19+25       0.3931      0.39  |      O  |         |         |         |
19+30       0.3931      0.39  |      O  |         |         |         |
19+35       0.3931      0.39  |      O  |         |         |         |
19+40       0.3931      0.39  |      O  |         |         |         |
19+45       0.3931      0.39  |      O  |         |         |         |
19+50       0.3931      0.39  |      O  |         |         |         |
19+55       0.3931      0.39  |      O  |         |         |         |
20+ 0       0.3931      0.39  |      O  |         |         |         |
20+ 5       0.3931      0.39  |      O  |         |         |         |
20+10       0.3931      0.39  |      O  |         |         |         |
20+15       0.3931      0.39  |      O  |         |         |         |
20+20       0.3931      0.39  |      O  |         |         |         |
20+25       0.3931      0.39  |      O  |         |         |         |
20+30       0.3931      0.39  |      O  |         |         |         |
20+35       0.3931      0.39  |      O  |         |         |         |
20+40       0.3931      0.39  |      O  |         |         |         |
20+45       0.3931      0.39  |      O  |         |         |         |
20+50       0.3931      0.39  |      O  |         |         |         |
20+55       0.3897      0.39  |      O  |         |         |         |
21+ 0       0.3830      0.38  |     IO  |         |         |         |
21+ 5       0.3758      0.37  |     O   |         |         |         |
21+10       0.3681      0.37  |     O   |         |         |         |
21+15       0.3601      0.36  |     O   |         |         |         |
21+20       0.3526      0.35  |     O   |         |         |         |
21+25       0.3459      0.35  |     O   |         |         |         |
21+30       0.3399      0.34  |     O   |         |         |         |
21+35       0.3339      0.33  |     O   |         |         |         |
21+40       0.3273      0.33  |    O    |         |         |         |
21+45       0.3205      0.32  |    O    |         |         |         |
21+50       0.3140      0.31  |    O    |         |         |         |
21+55       0.3084      0.31  |    O    |         |         |         |
22+ 0       0.3034      0.30  |    O    |         |         |         |
22+ 5       0.2983      0.30  |    O    |         |         |         |
22+10       0.2927      0.29  |    O    |         |         |         |
22+15       0.2868      0.29  |    O    |         |         |         |
22+20       0.2813      0.28  |    O    |         |         |         |
22+25       0.2766      0.28  |    O    |         |         |         |
22+30       0.2724      0.27  |   O     |         |         |         |
22+35       0.2685      0.27  |   O     |         |         |         |
22+40       0.2646      0.26  |   O     |         |         |         |
22+45       0.2609      0.26  |   O     |         |         |         |
22+50       0.2573      0.26  |   O     |         |         |         |
22+55       0.2537      0.25  |   O     |         |         |         |
23+ 0       0.2503      0.25  |   O     |         |         |         |
23+ 5       0.2469      0.25  |   O     |         |         |         |
23+10       0.2436      0.24  |   O     |         |         |         |
23+15       0.2404      0.24  |   O     |         |         |         |
23+20       0.2373      0.24  |   O     |         |         |         |
23+25       0.2343      0.23  |   O     |         |         |         |
23+30       0.2314      0.23  |   O     |         |         |         |
23+35       0.2285      0.23  |   O     |         |         |         |
23+40       0.2257      0.23  |   O     |         |         |         |
23+45       0.2230      0.22  |   O     |         |         |         |
23+50       0.2203      0.22  |   O     |         |         |         |
23+55       0.2177      0.22  |  O      |         |         |         |
24+ 0       0.2152      0.21  |  O      |         |         |         |
24+ 5       0.2121      0.21  |  O      |         |         |         |
24+10       0.2078      0.21  |  O      |         |         |         |
24+15       0.2027      0.20  |  O      |         |         |         |
24+20       0.1975      0.20  |  O      |         |         |         |
24+25       0.1923      0.19  |  O      |         |         |         |
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24+30       0.1874      0.19  |  O      |         |         |         |
24+35       0.1825      0.18  |  O      |         |         |         |
24+40       0.1778      0.18  |  O      |         |         |         |
24+45       0.1732      0.17  |  O      |         |         |         |
24+50       0.1687      0.17  |  O      |         |         |         |
24+55       0.1643      0.16  | IO      |         |         |         |
25+ 0       0.1600      0.16  | O       |         |         |         |
25+ 5       0.1559      0.16  | O       |         |         |         |
25+10       0.1518      0.15  | O       |         |         |         |
25+15       0.1479      0.15  | O       |         |         |         |
25+20       0.1441      0.14  | O       |         |         |         |
25+25       0.1403      0.14  | O       |         |         |         |
25+30       0.1367      0.14  | O       |         |         |         |
25+35       0.1331      0.13  | O       |         |         |         |
25+40       0.1297      0.13  | O       |         |         |         |
25+45       0.1263      0.13  | O       |         |         |         |
25+50       0.1230      0.12  | O       |         |         |         |
25+55       0.1198      0.12  | O       |         |         |         |
26+ 0       0.1167      0.12  | O       |         |         |         |
26+ 5       0.1137      0.11  | O       |         |         |         |
26+10       0.1108      0.11  | O       |         |         |         |
26+15       0.1079      0.11  |O        |         |         |         |
26+20       0.1051      0.10  |O        |         |         |         |
26+25       0.1024      0.10  |O        |         |         |         |
26+30       0.0997      0.10  |O        |         |         |         |
26+35       0.0133      0.00  O         |         |         |         |
26+40       0.0000      0.00  O         |         |         |         |
----------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   320
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        2.180 (CFS)
                  Total volume =       1.075 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

      ----------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station      603.200 to Point/Station      603.200
      **** STORE OR DELETE CURRENT HYDROGRAPH ****
      ______________________________________________________________________
      Current stream hydrograph saved in file 27259FPOND1024.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =     0
                  Time interval =    0.0 (Min.)
                  Maximum/Peak flow rate =        0.000 (CFS)
                  Total volume =       0.000 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************
```