14 ANEXO 5.- HIDROLOGÍA

En el presente anexo se recogen los resultados del análisis hidrológico realizado para el ámbito de estudio, conforme a las indicaciones establecidas en el PATRICOVA. Las simulaciones se han desarrollado mediante el modelo **HEC-HMS**, obteniéndose los hidrogramas y parámetros hidrológicos asociados a eventos de lluvia de **2 horas** y **6 horas** de duración para los periodos de retorno **T = 25, 100 y 500 años**. De la información analizada, se emplean exclusivamente los resultados correspondientes a la **cuenca B1** como datos de entrada para el posterior análisis hidráulico, al ser la cuenca que condiciona el funcionamiento hidráulico del ámbito objeto del estudio.

Project: Uhi 2
Simulation Run: T025
Simulation Start: 31 December 1999, 24:00
Simulation End: 1 January 2000, 06:00

HMS Version: 4.12
Executed: 26 January 2026, 20:30

Global Parameter Summary - Subbasin

Location

Element Name	Longitude Degrees	Latitude Degrees
B2	-0.11	39.93
B1	-0.13	39.94
A1	-0.11	39.93
C1	-0.12	39.92
D3	-0.12	39.92

Area (KM2)

Element Name	Area (KM2)
B2	0.65
B1	0.48
A1	0.6
C1	0.49
D3	0.43

Downstream

Element Name	Downstream
B2	Junction - 3
B1	Junction - 1
A1	Junction - 3
C1	Junction - 4
D3	Junction - 5

Loss Rate: Scs

Element Name	Percent Impervious Area	Curve Number	Initial Abstraction
B2	0	77.34	0
B1	0	76.54	0
A1	0	80.23	0
C1	0	76.34	0
D3	0	74.53	0

Transform: Scs

Element Name	Lag	Unitgraph Type
B2	44.84	Standard
B1	32.5	Standard
A1	43.41	Standard
C1	35.1	Standard
D3	33.1	Standard

Global Parameter Summary - Reach

Downstream

Element Name	Downstream
Reach - 2	Junction - 3

Route: Lag

Element Name	Method	Initial Variable	Lag
Reach - 2	Lag	Combined Inflow	120

Global Results Summary

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
B2	0.65	6.64	01Jan2000, 01:50	50.76
B1	0.48	5.78	01Jan2000, 01:35	49.73
Junction - 1	0.48	5.78	01Jan2000, 01:35	49.73
A1	0.6	6.75	01Jan2000, 01:50	54.64
Reach - 2	0.48	5.78	01Jan2000, 03:35	49.69
Junction - 3	1.74	13.39	01Jan2000, 01:50	51.81
C1	0.49	5.59	01Jan2000, 01:40	49.48
Junction - 4	0.49	5.59	01Jan2000, 01:40	49.48
D3	0.43	4.9	01Jan2000, 01:35	47.24
Junction - 5	0.43	4.9	01Jan2000, 01:35	47.24

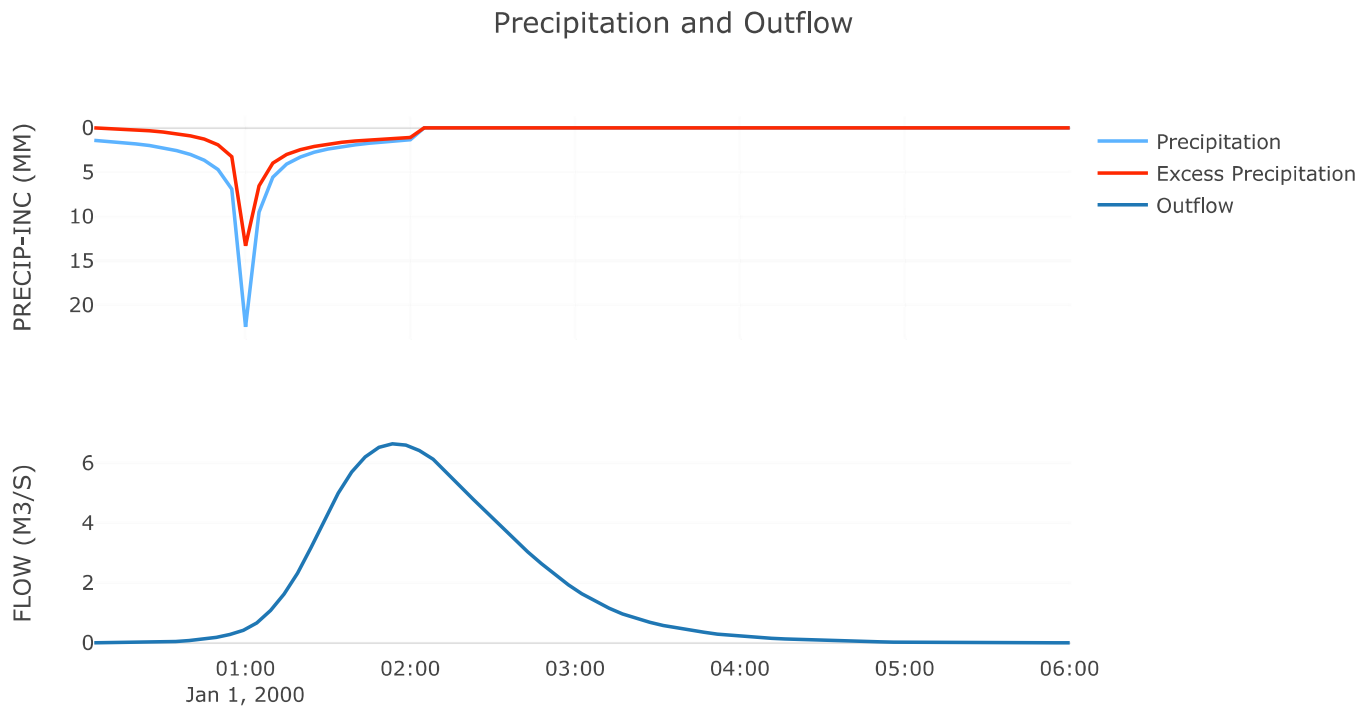
Subbasin: B2

Area (KM2) : 0.65
Latitude Degrees : 39.93
Longitude Degrees : -0.11
Downstream : Junction - 3

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	77.34
Initial Abstraction	0

Transform: Scs	
Lag	44.84
Unitgraph Type	Standard

Results: B2	
Peak Discharge (M3/S)	6.64
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	50.76
Precipitation Volume (M3)	60092.82
Loss Volume (M3)	26893.26
Excess Volume (M3)	33199.56
Direct Runoff Volume (M3)	33199.56
Baseflow Volume (M3)	0



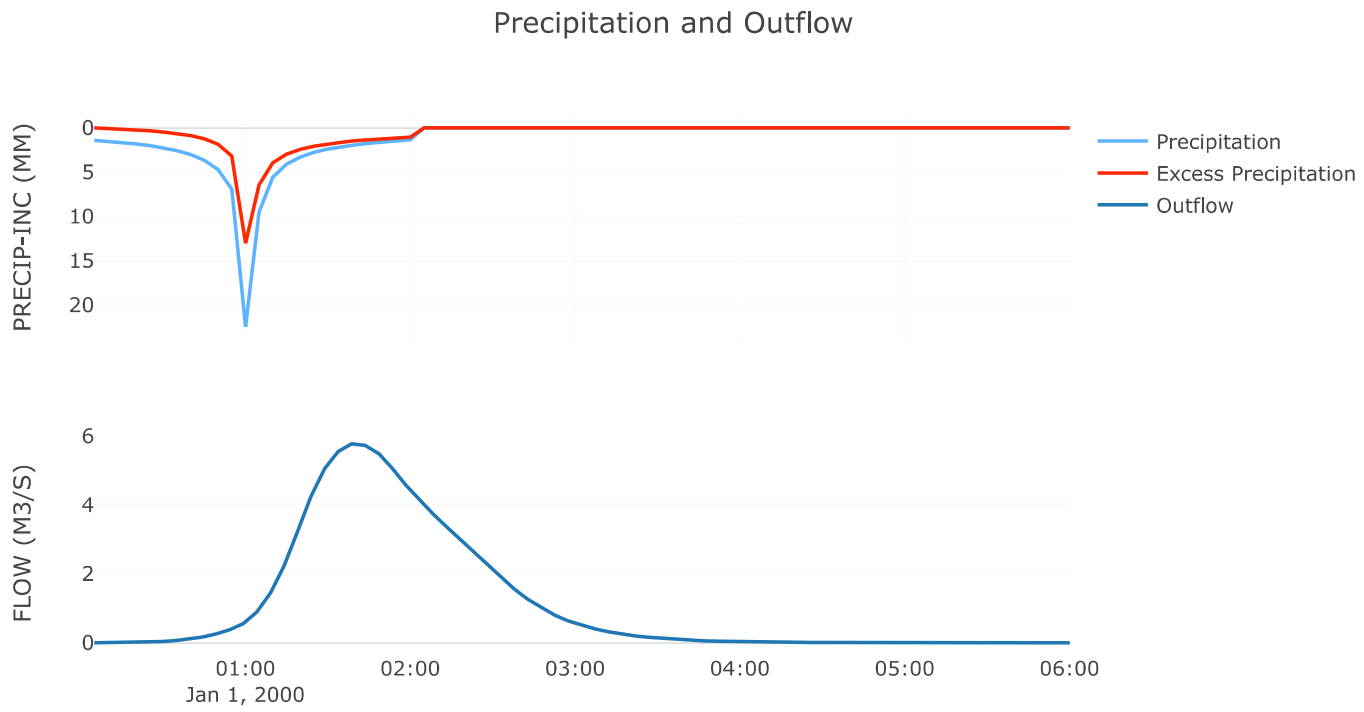
Subbasin: B1

Area (KM2) : 0.48
Latitude Degrees : 39.94
Longitude Degrees : -0.13
Downstream : Junction - 1

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	76.54
Initial Abstraction	0

Transform: Scs	
Lag	32.5
Unitgraph Type	Standard

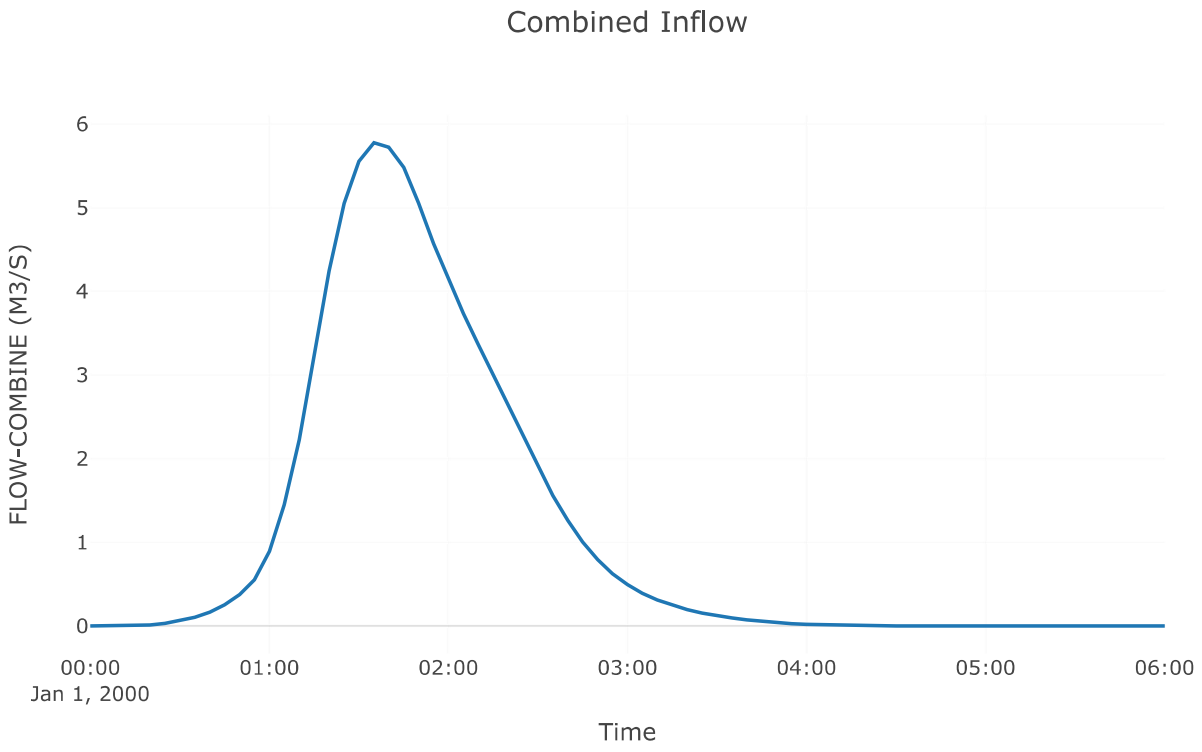
Results: B1	
Peak Discharge (M3/S)	5.78
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	49.73
Precipitation Volume (M3)	43997.02
Loss Volume (M3)	20181.54
Excess Volume (M3)	23815.48
Direct Runoff Volume (M3)	23815.48
Baseflow Volume (M3)	0

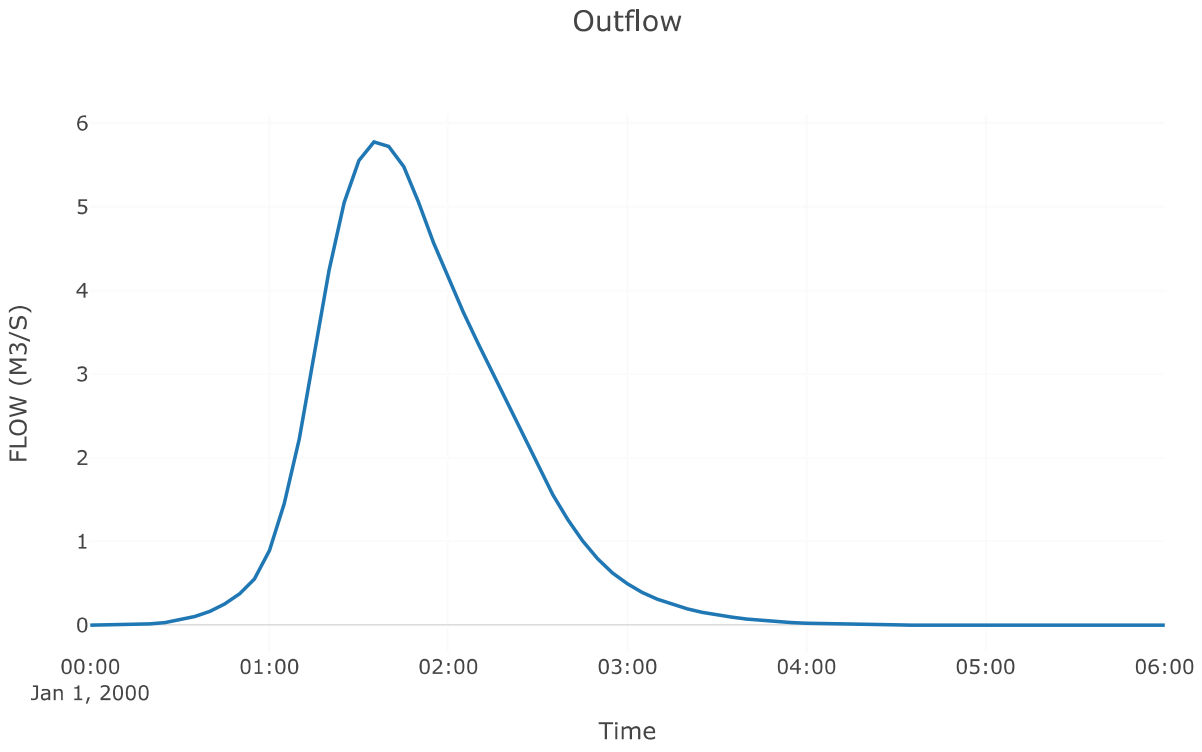


Junction: Junction-1

Downstream : Reach - 2

Results: Junction-1	
Peak Discharge (M3/S)	5.78
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	49.73


Combined Inflow
FLOW-COMBINE (M3/S)
0
1
2
3
4
5
6
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time


Outflow
FLOW (M3/S)
0
1
2
3
4
5
6
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

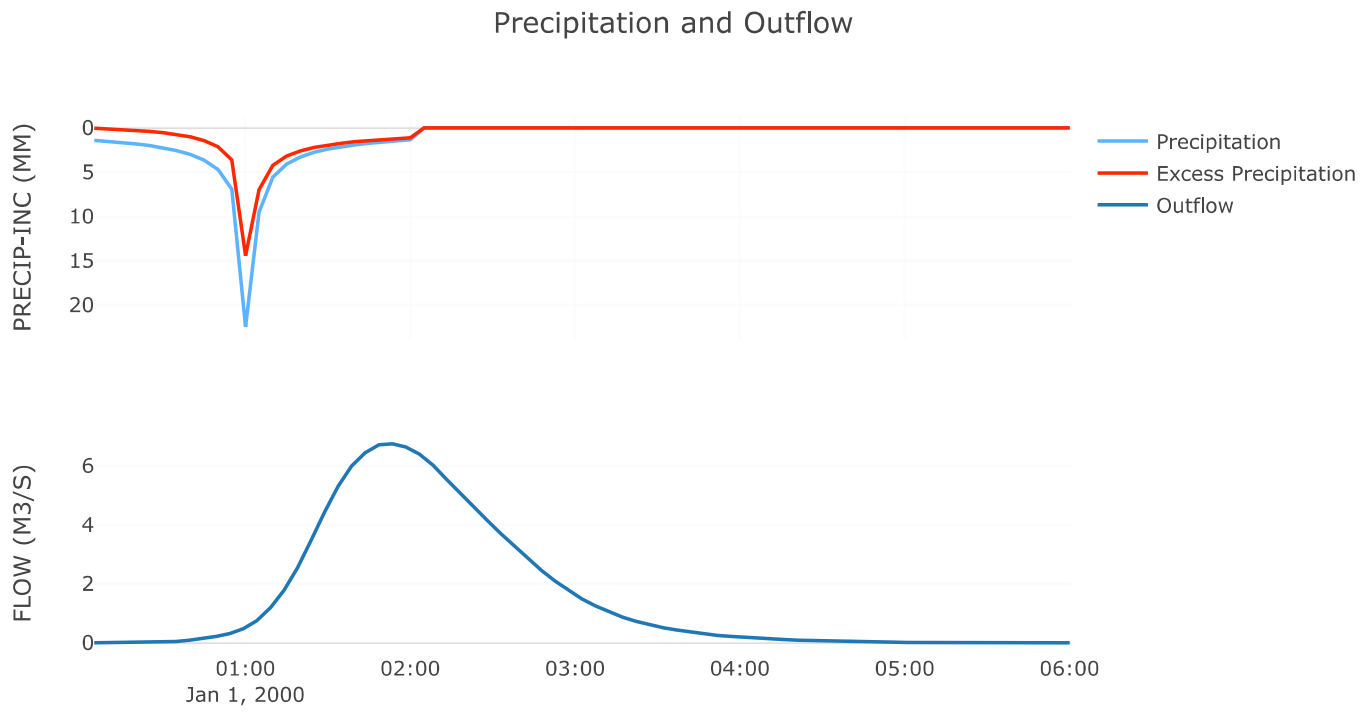
Subbasin: A1

Area (KM2) : 0.6
Latitude Degrees : 39.93
Longitude Degrees : -0.11
Downstream : Junction - 3

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	80.23
Initial Abstraction	0

Transform: Scs	
Lag	43.41
Unitgraph Type	Standard

Results: A1	
Peak Discharge (M3/S)	6.75
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	54.64
Precipitation Volume (M3)	55536.02
Loss Volume (M3)	22504.02
Excess Volume (M3)	33032
Direct Runoff Volume (M3)	33032
Baseflow Volume (M3)	0

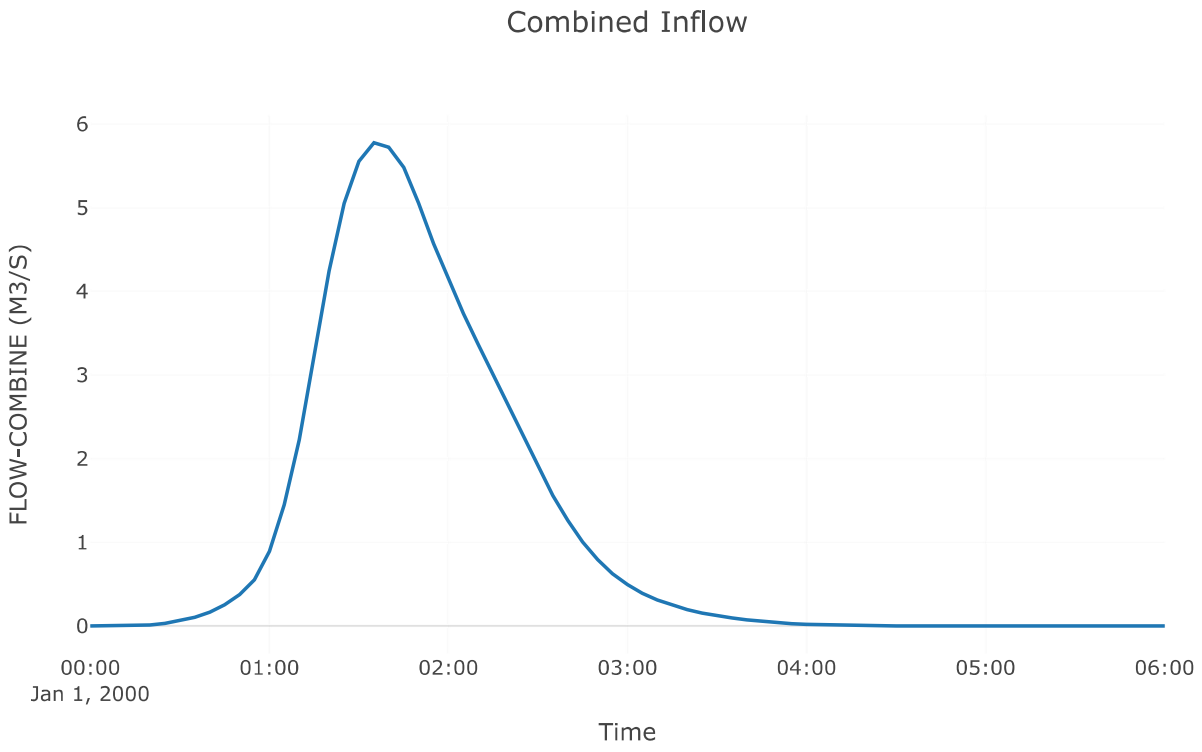


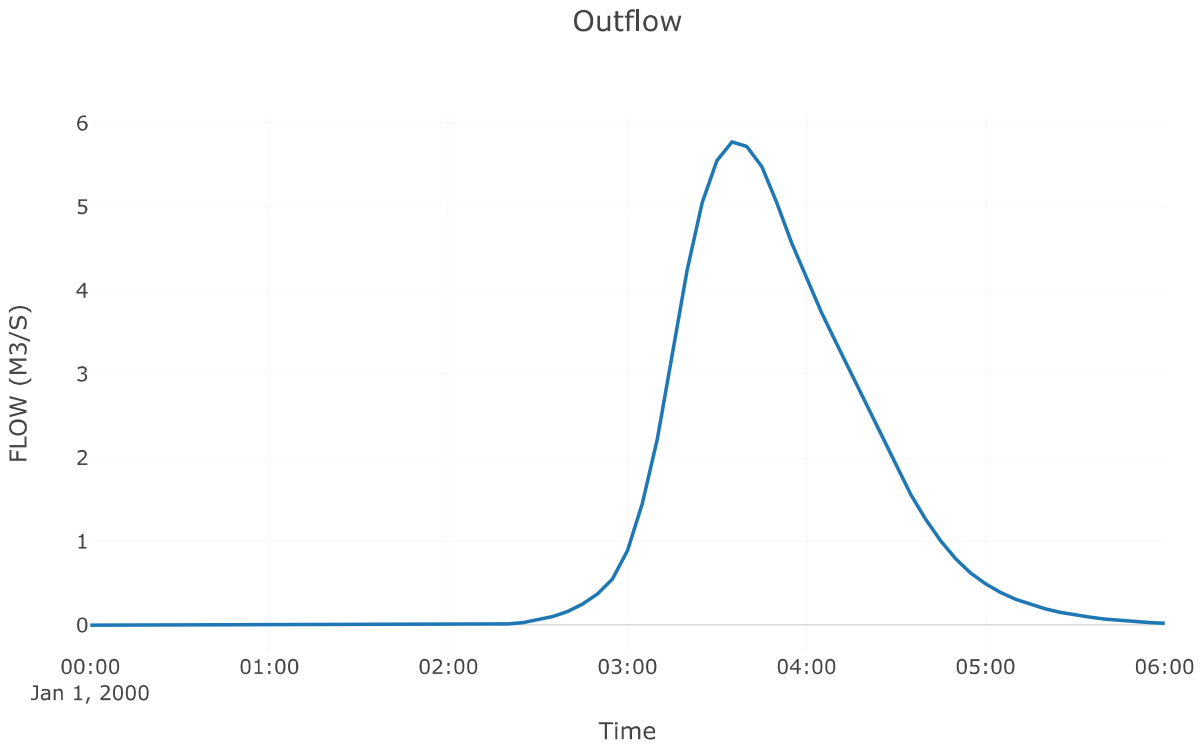
Reach: Reach-2

Downstream : Junction - 3

Route: Lag	
Method	Lag
Initial Variable	Combined Inflow
Lag	120

Results: Reach-2	
Peak Discharge (M3/S)	5.78
Time of Peak Discharge	01Jan2000, 03:35
Volume (MM)	49.69
Peak Inflow (M3/S)	5.78
Inflow Volume (M3)	23815.48

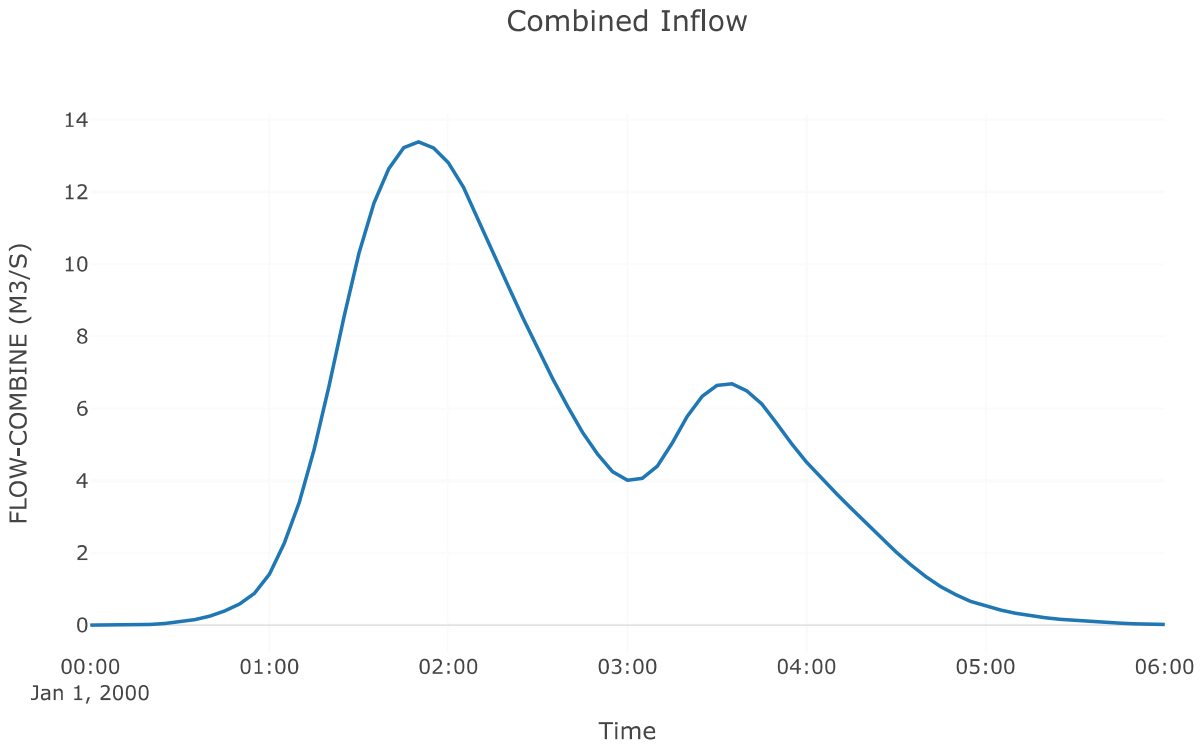

Combined Inflow
FLOW-COMBINE (M3/S)
0
1
2
3
4
5
6
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

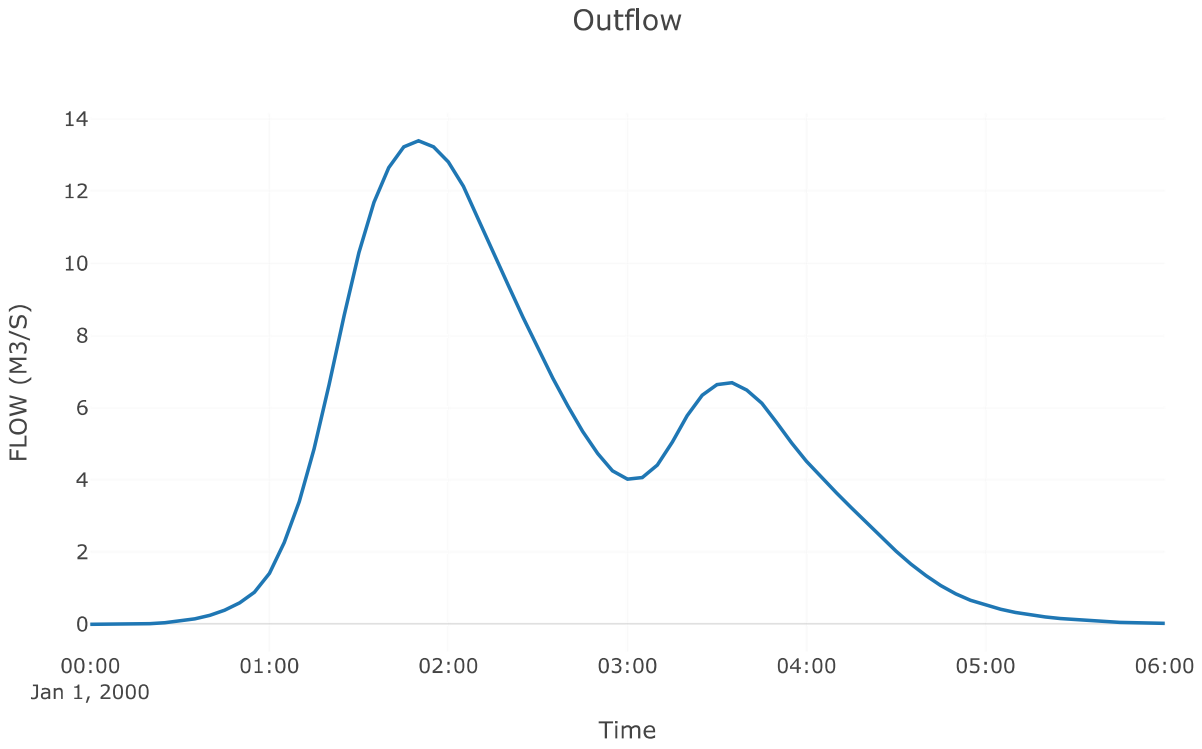

Outflow
FLOW (M3/S)
0
1
2
3
4
5
6
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

Junction: Junction-3

Results: Junction-3

Peak Discharge (M3/S)	13.39
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	51.81





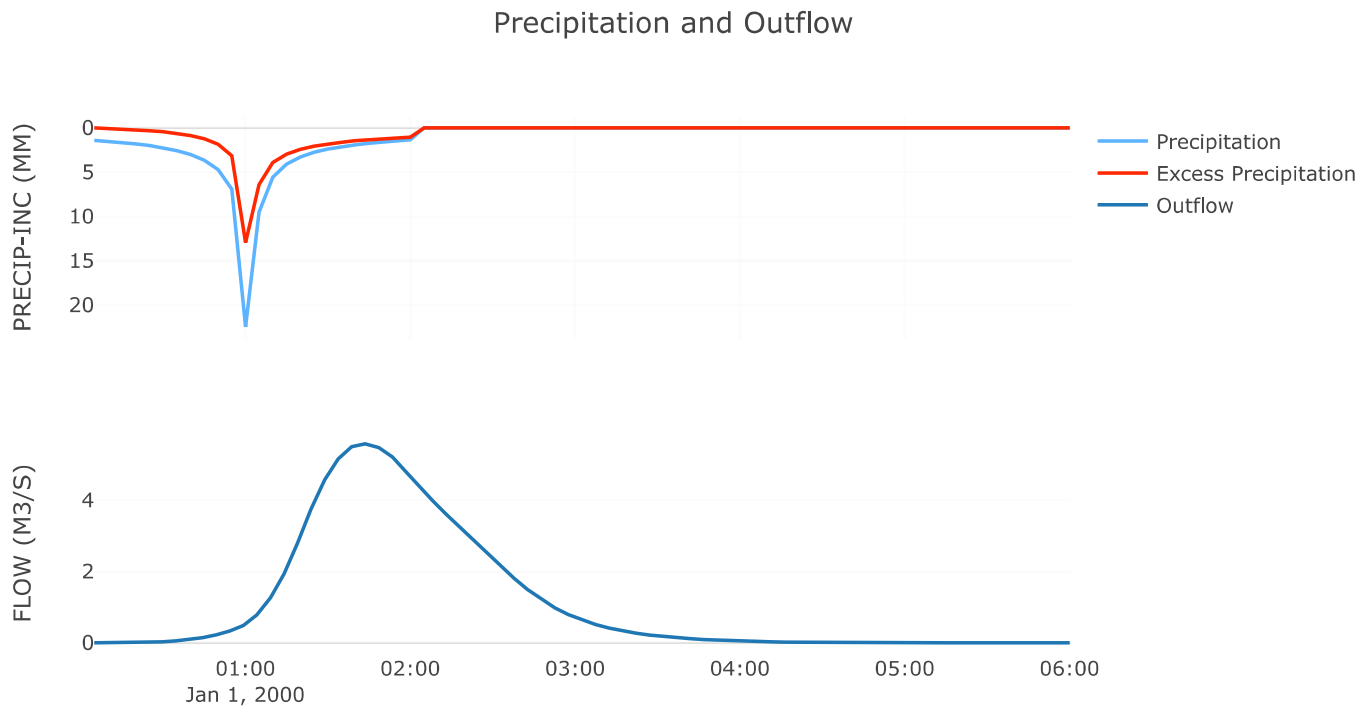
Subbasin: C1

Area (KM2) : 0.49
Latitude Degrees : 39.92
Longitude Degrees : -0.12
Downstream : Junction - 4

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	76.34
Initial Abstraction	0

Transform: Scs	
Lag	35.1
Unitgraph Type	Standard

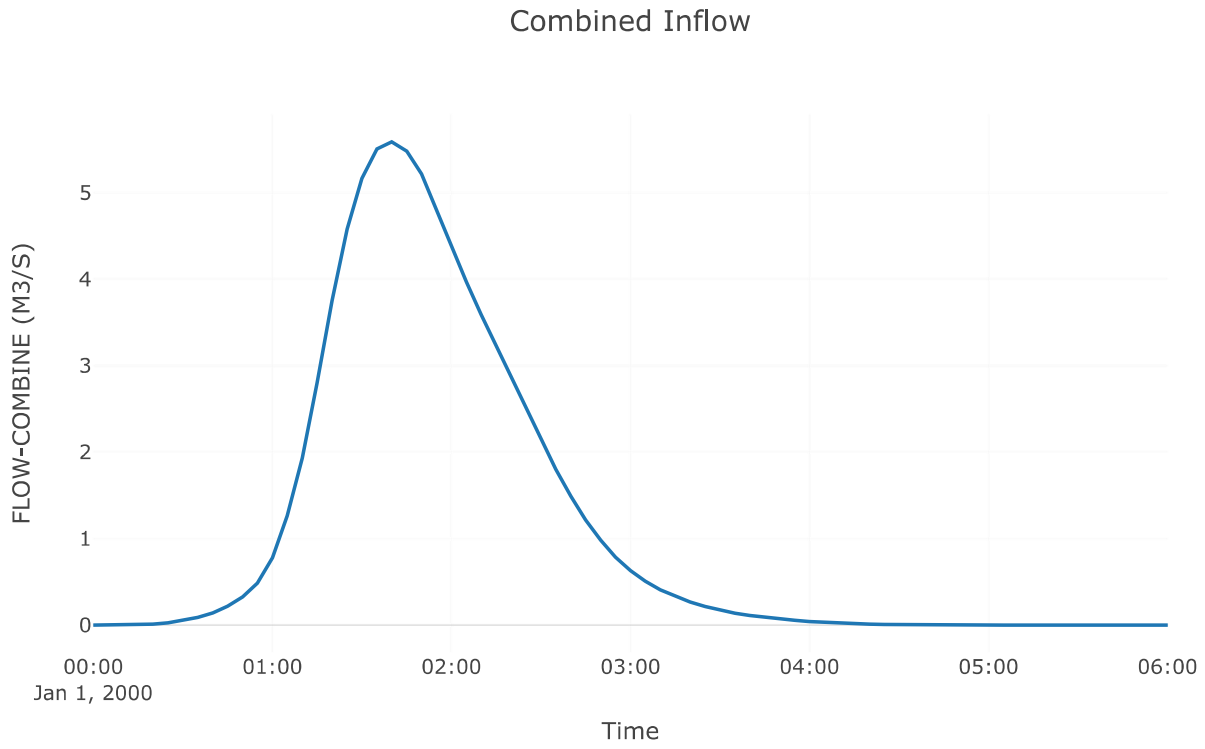
Results: C1	
Peak Discharge (M3/S)	5.59
Time of Peak Discharge	01Jan2000, 01:40
Volume (MM)	49.48
Precipitation Volume (M3)	44750.36
Loss Volume (M3)	20650.55
Excess Volume (M3)	24099.82
Direct Runoff Volume (M3)	24099.82
Baseflow Volume (M3)	0

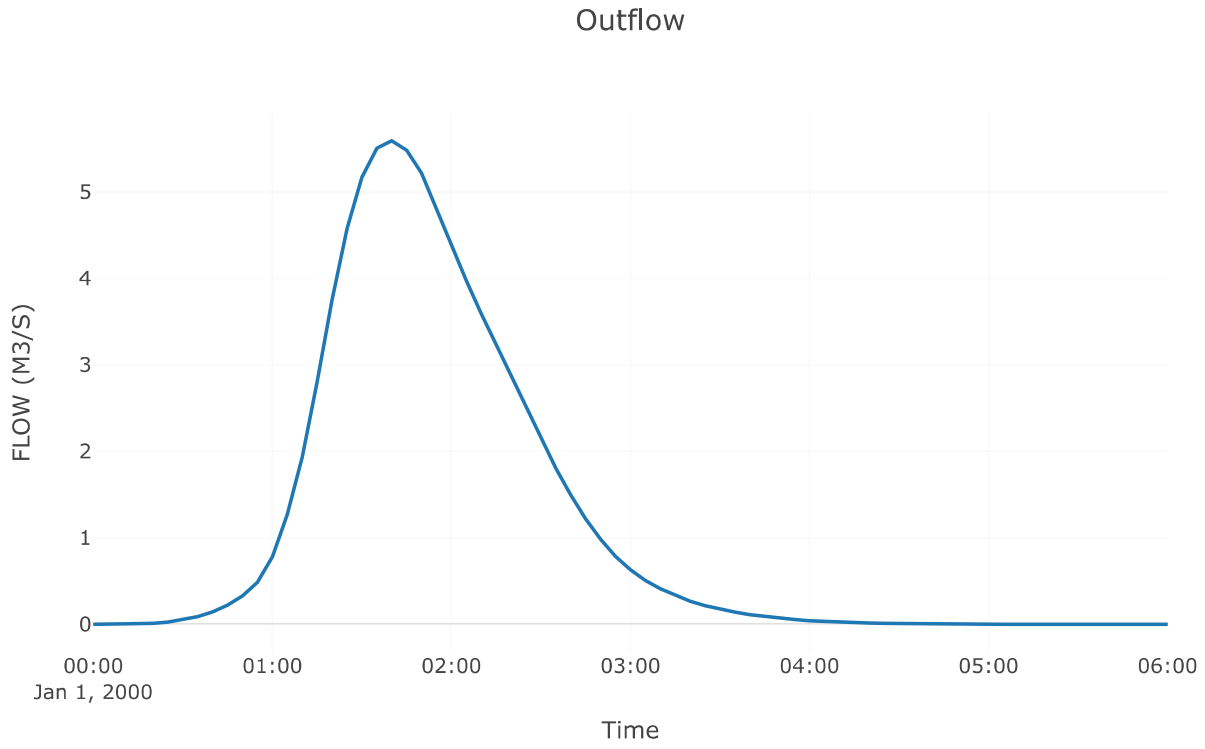


Junction: Junction-4

Results: Junction-4

Peak Discharge (M3/S)	5.59
Time of Peak Discharge	01Jan2000, 01:40
Volume (MM)	49.48





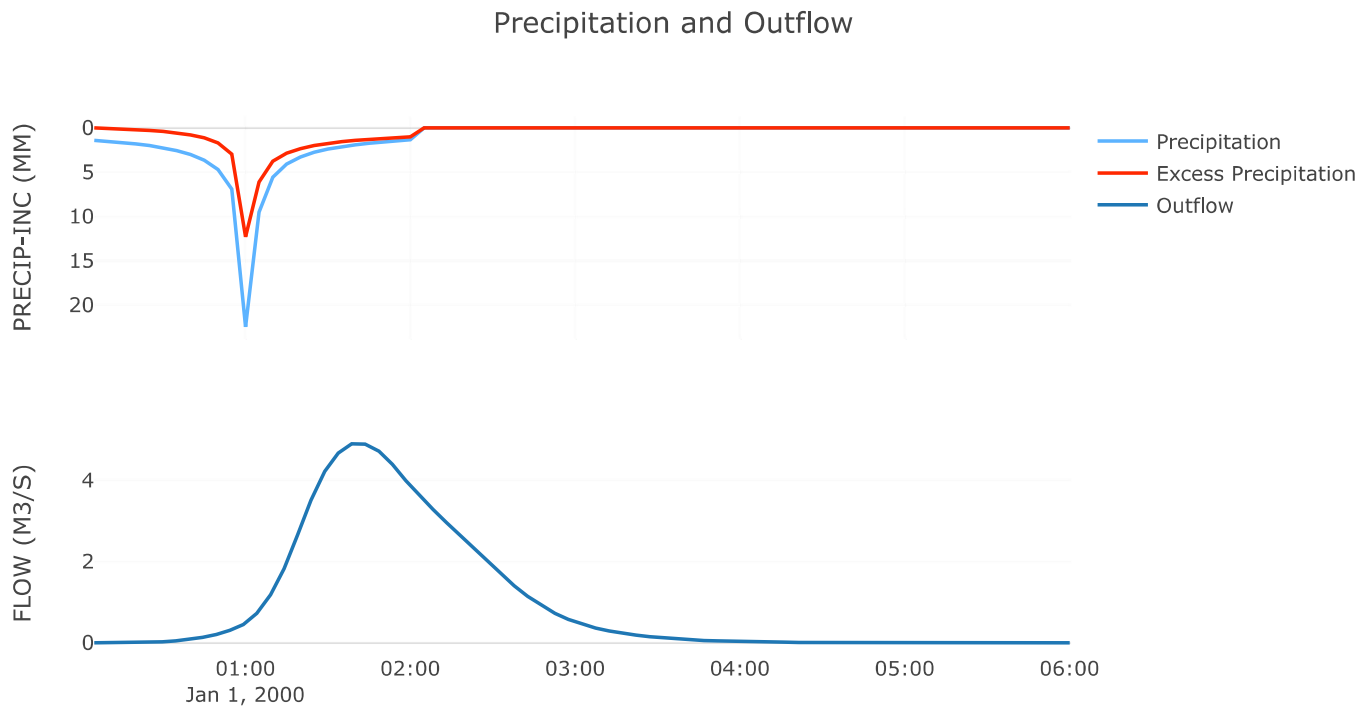
Subbasin: D3

Area (KM2) : 0.43
Latitude Degrees : 39.92
Longitude Degrees : -0.12
Downstream : Junction - 5

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	74.53
Initial Abstraction	0

Transform: Scs	
Lag	33.1
Unitgraph Type	Standard

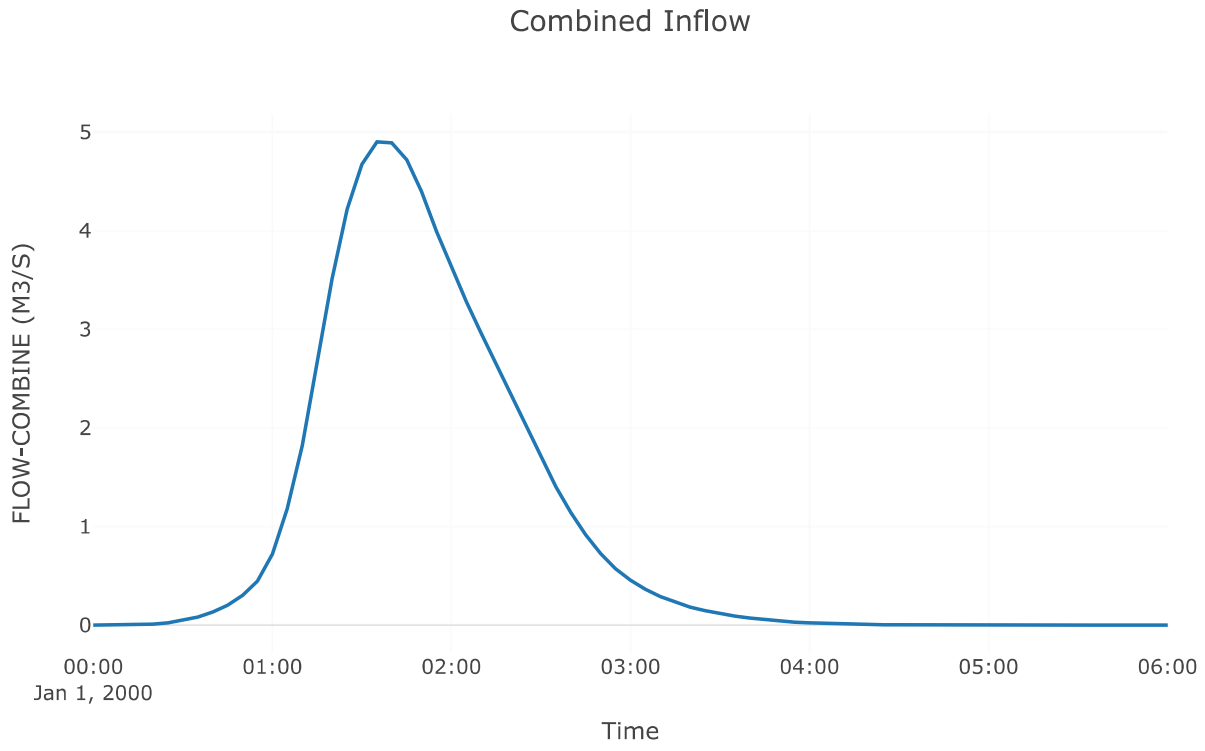
Results: D3	
Peak Discharge (M3/S)	4.9
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	47.24
Precipitation Volume (M3)	39890.39
Loss Volume (M3)	19379.39
Excess Volume (M3)	20511
Direct Runoff Volume (M3)	20511
Baseflow Volume (M3)	0

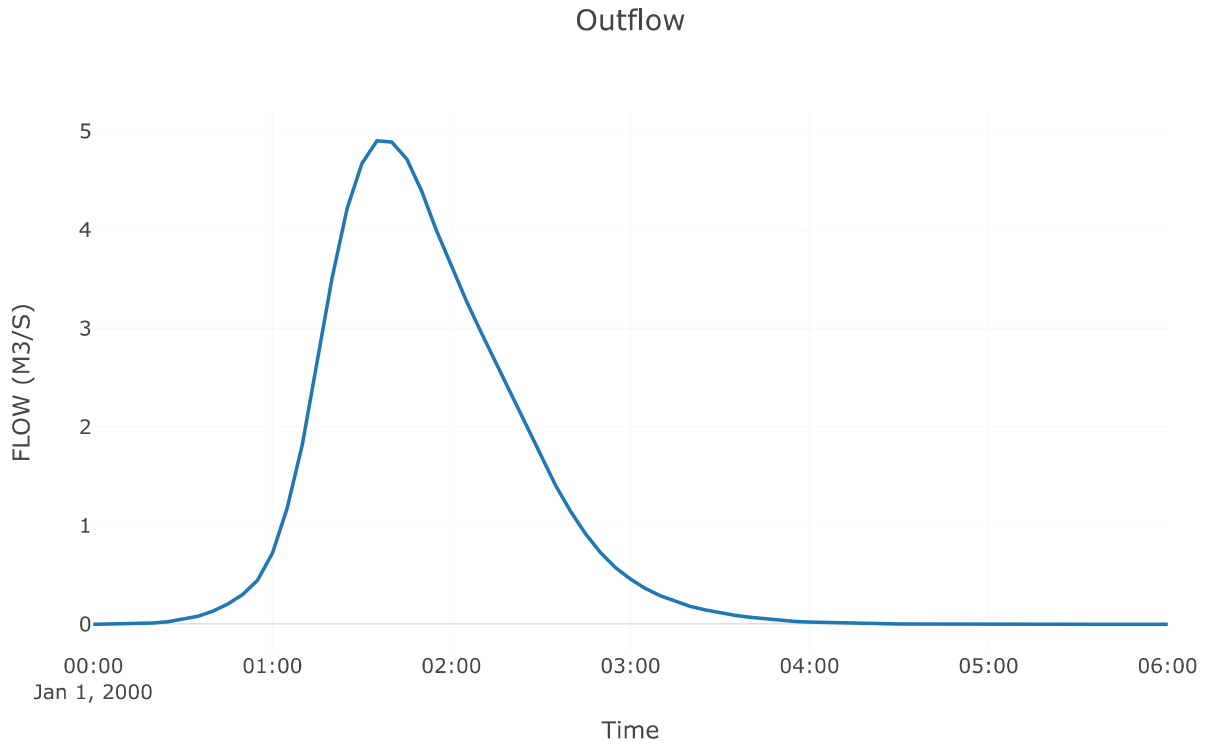


Junction: Junction-5

Results: Junction-5

Peak Discharge (M3/S)	4.9
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	47.24





Project: Uhi 2
Simulation Run: T100
Simulation Start: 31 December 1999, 24:00
Simulation End: 1 January 2000, 06:00

HMS Version: 4.12
Executed: 26 January 2026, 20:30

Global Parameter Summary - Subbasin

Location

Element Name	Longitude Degrees	Latitude Degrees
B2	-0.11	39.93
B1	-0.13	39.94
A1	-0.11	39.93
C1	-0.12	39.92
D3	-0.12	39.92

Area (KM2)

Element Name	Area (KM2)
B2	0.65
B1	0.48
A1	0.6
C1	0.49
D3	0.43

Downstream

Element Name	Downstream
B2	Junction - 3
B1	Junction - 1
A1	Junction - 3
C1	Junction - 4
D3	Junction - 5

Loss Rate: Scs

Element Name	Percent Impervious Area	Curve Number	Initial Abstraction
B2	0	77.34	0
B1	0	76.54	0
A1	0	80.23	0
C1	0	76.34	0
D3	0	74.53	0

Transform: Scs

Element Name	Lag	Unitgraph Type
B2	44.84	Standard
B1	32.5	Standard
A1	43.41	Standard
C1	35.1	Standard
D3	33.1	Standard

Global Parameter Summary - Reach

Downstream

Element Name	Downstream
Reach - 2	Junction - 3

Route: Lag

Element Name	Method	Initial Variable	Lag
Reach - 2	Lag	Combined Inflow	120

Global Results Summary

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
B2	0.65	10.31	01Jan2000, 01:50	78.54
B1	0.48	9.02	01Jan2000, 01:35	77.21
Junction - 1	0.48	9.02	01Jan2000, 01:35	77.21
A1	0.6	10.32	01Jan2000, 01:50	83.49
Reach - 2	0.48	9.02	01Jan2000, 03:35	77.15
Junction - 3	1.74	20.63	01Jan2000, 01:50	79.88
C1	0.49	8.71	01Jan2000, 01:40	76.88
Junction - 4	0.49	8.71	01Jan2000, 01:40	76.88
D3	0.43	7.73	01Jan2000, 01:35	73.95
Junction - 5	0.43	7.73	01Jan2000, 01:35	73.95

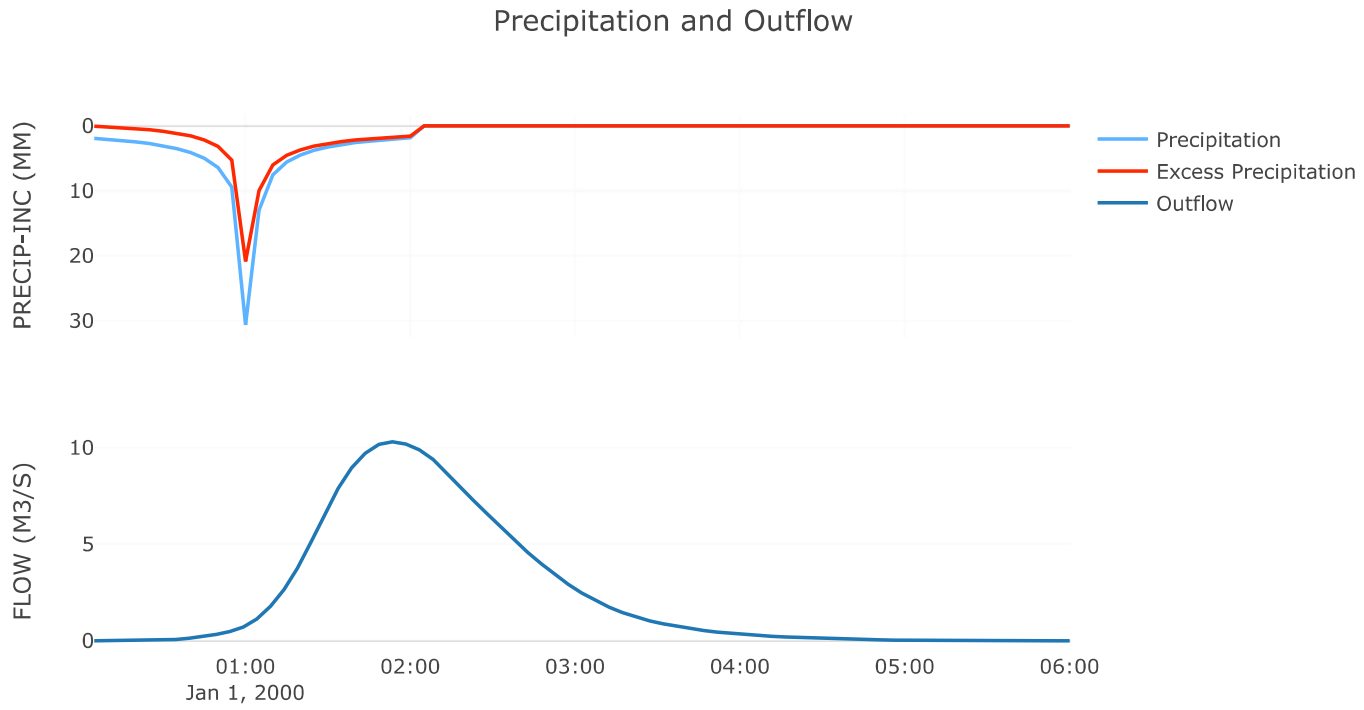
Subbasin: B2

Area (KM2) : 0.65
Latitude Degrees : 39.93
Longitude Degrees : -0.11
Downstream : Junction - 3

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	77.34
Initial Abstraction	0

Transform: Scs	
Lag	44.84
Unitgraph Type	Standard

Results: B2	
Peak Discharge (M3/S)	10.31
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	78.54
Precipitation Volume (M3)	81906.4
Loss Volume (M3)	30532.32
Excess Volume (M3)	51374.08
Direct Runoff Volume (M3)	51374.08
Baseflow Volume (M3)	0



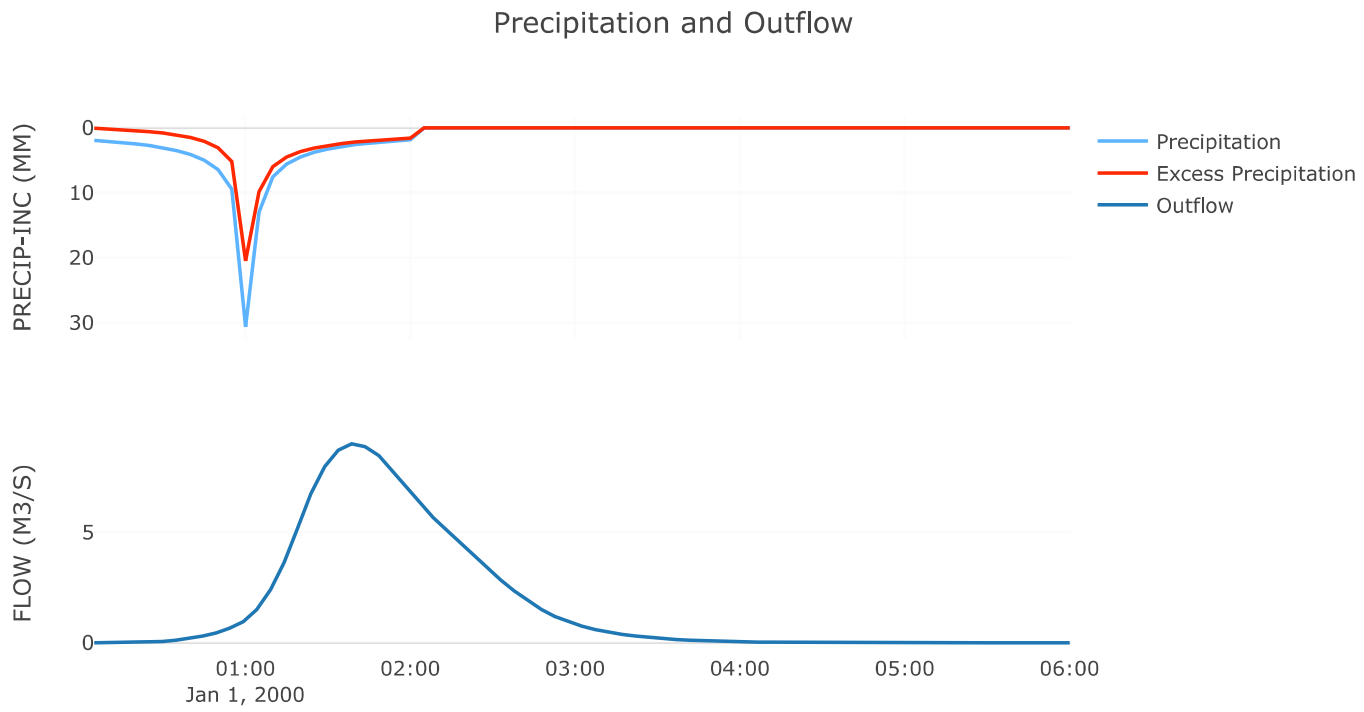
Subbasin: B1

Area (KM2) : 0.48
Latitude Degrees : 39.94
Longitude Degrees : -0.13
Downstream : Junction - 1

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	76.54
Initial Abstraction	0

Transform: Scs	
Lag	32.5
Unitgraph Type	Standard

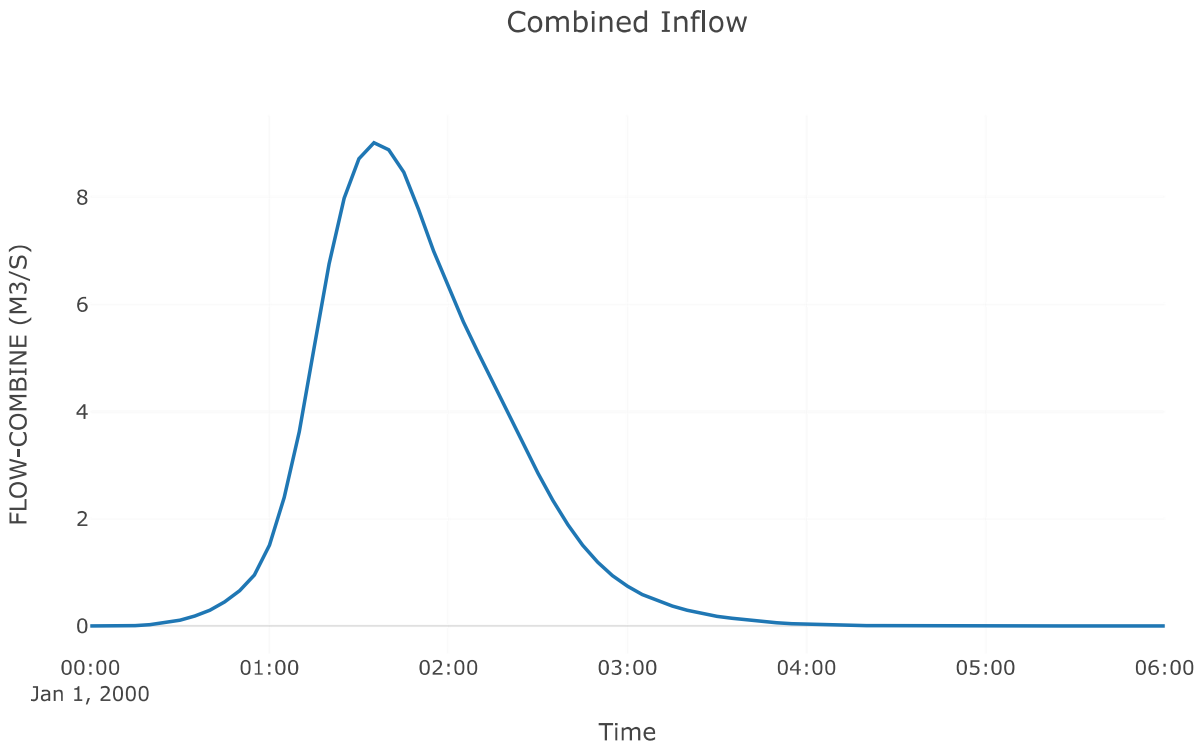
Results: B1	
Peak Discharge (M3/S)	9.02
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	77.21
Precipitation Volume (M3)	59967.86
Loss Volume (M3)	22990.08
Excess Volume (M3)	36977.78
Direct Runoff Volume (M3)	36977.78
Baseflow Volume (M3)	0

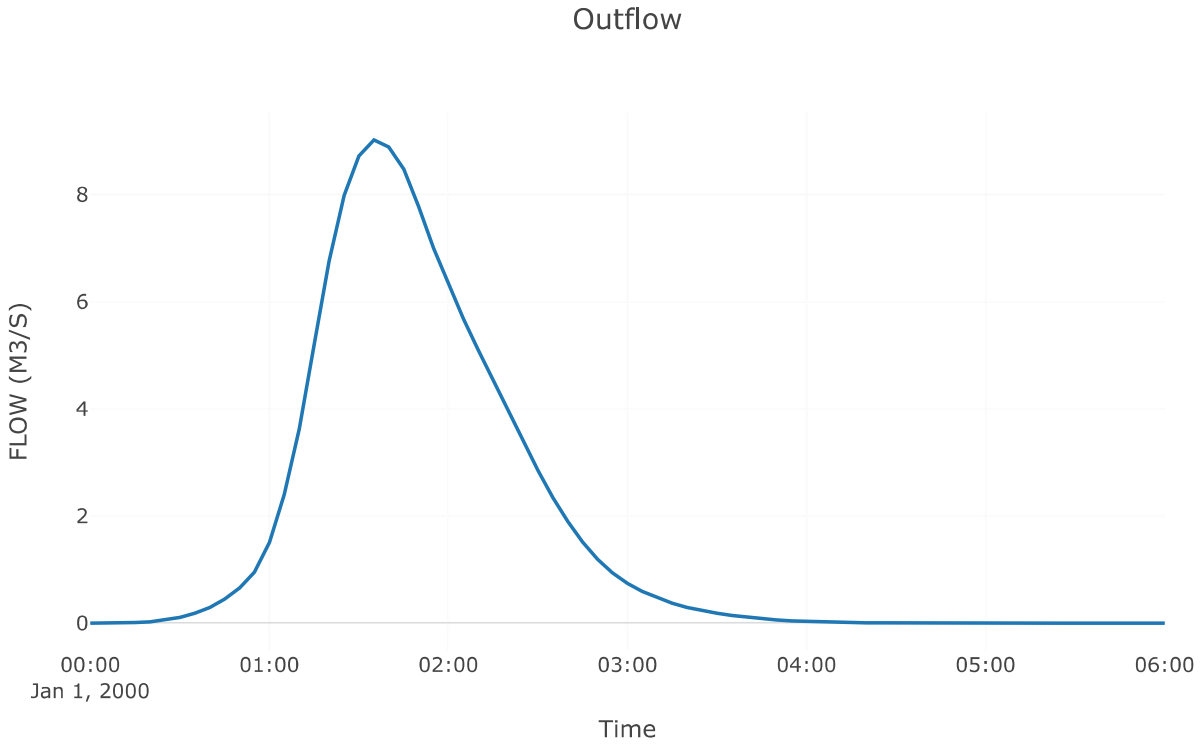


Junction: Junction-1

Downstream : Reach - 2

Results: Junction-1	
Peak Discharge (M3/S)	9.02
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	77.21


Combined Inflow
FLOW-COMBINE (M3/S)
0
2
4
6
8
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time


Outflow
FLOW (M3/S)
0
2
4
6
8
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

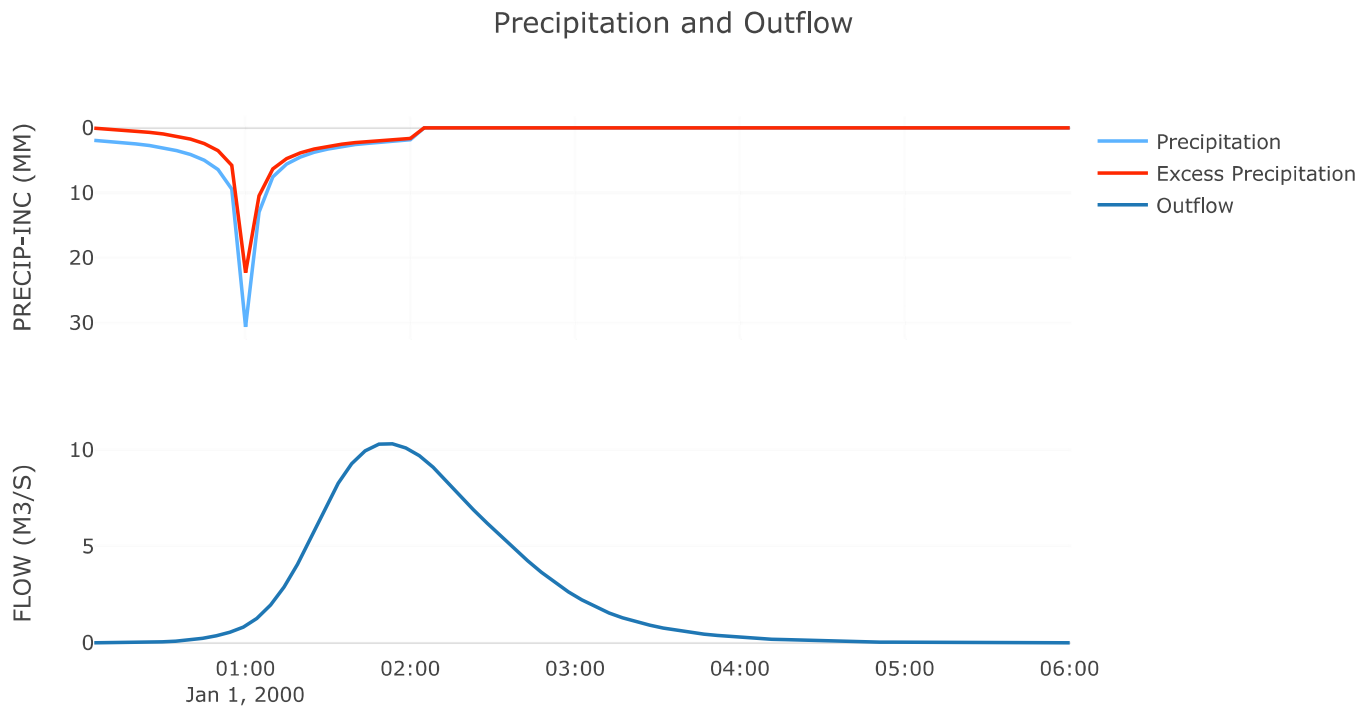
Subbasin: A1

Area (KM2) : 0.6
Latitude Degrees : 39.93
Longitude Degrees : -0.11
Downstream : Junction - 3

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	80.23
Initial Abstraction	0

Transform: Scs	
Lag	43.41
Unitgraph Type	Standard

Results: A1	
Peak Discharge (M3/S)	10.32
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	83.49
Precipitation Volume (M3)	75695.49
Loss Volume (M3)	25226.4
Excess Volume (M3)	50469.09
Direct Runoff Volume (M3)	50469.09
Baseflow Volume (M3)	0

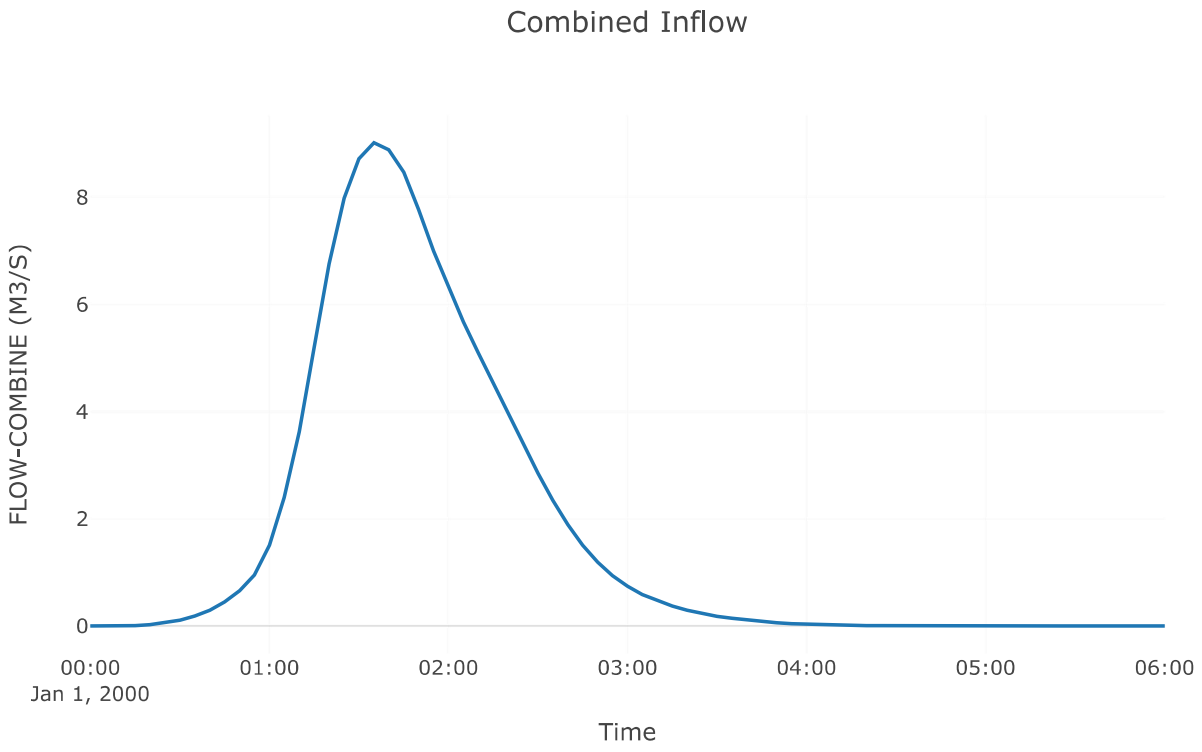


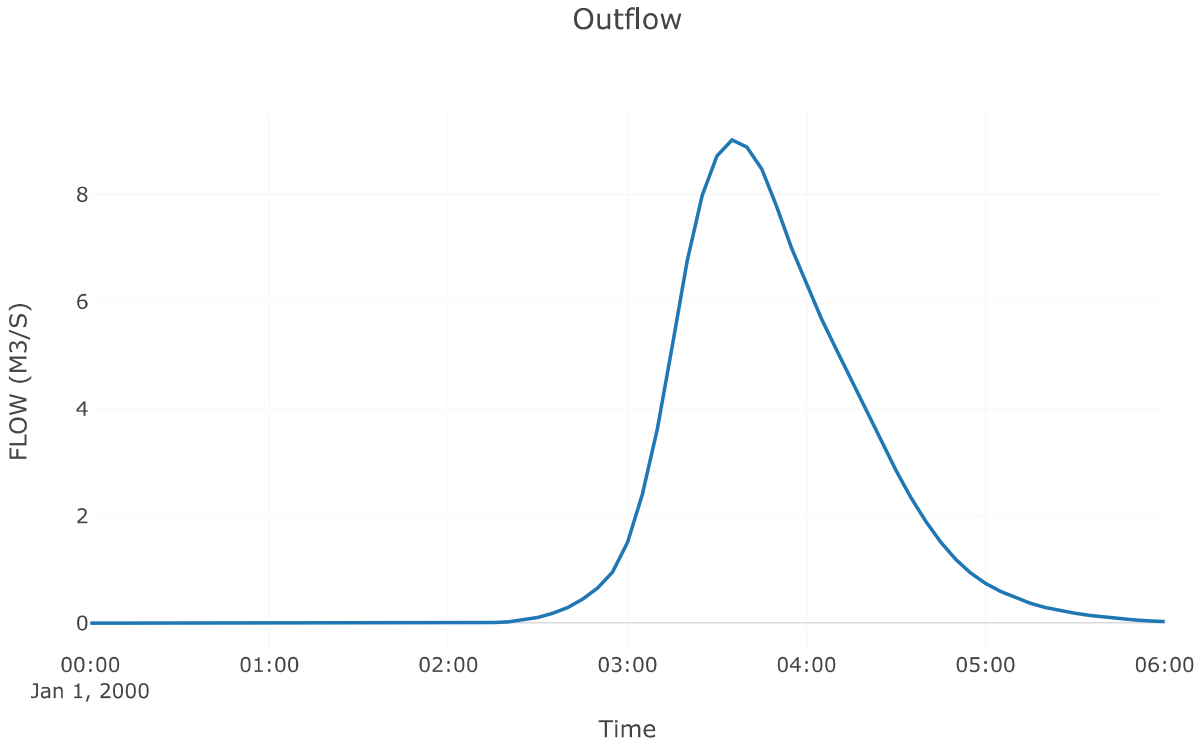
Reach: Reach-2

Downstream : Junction - 3

Route: Lag	
Method	Lag
Initial Variable	Combined Inflow
Lag	120

Results: Reach-2	
Peak Discharge (M3/S)	9.02
Time of Peak Discharge	01Jan2000, 03:35
Volume (MM)	77.15
Peak Inflow (M3/S)	9.02
Inflow Volume (M3)	36977.78

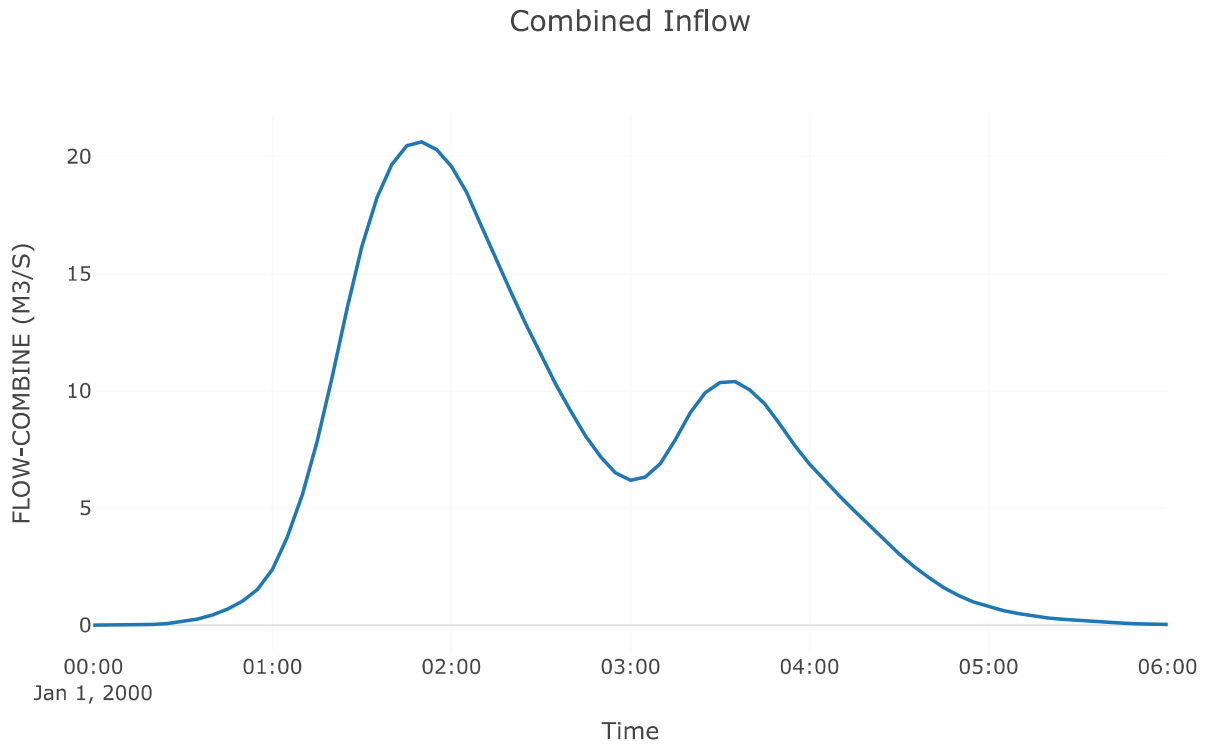

Combined Inflow
FLOW-COMBINE (M3/S)
0
2
4
6
8
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

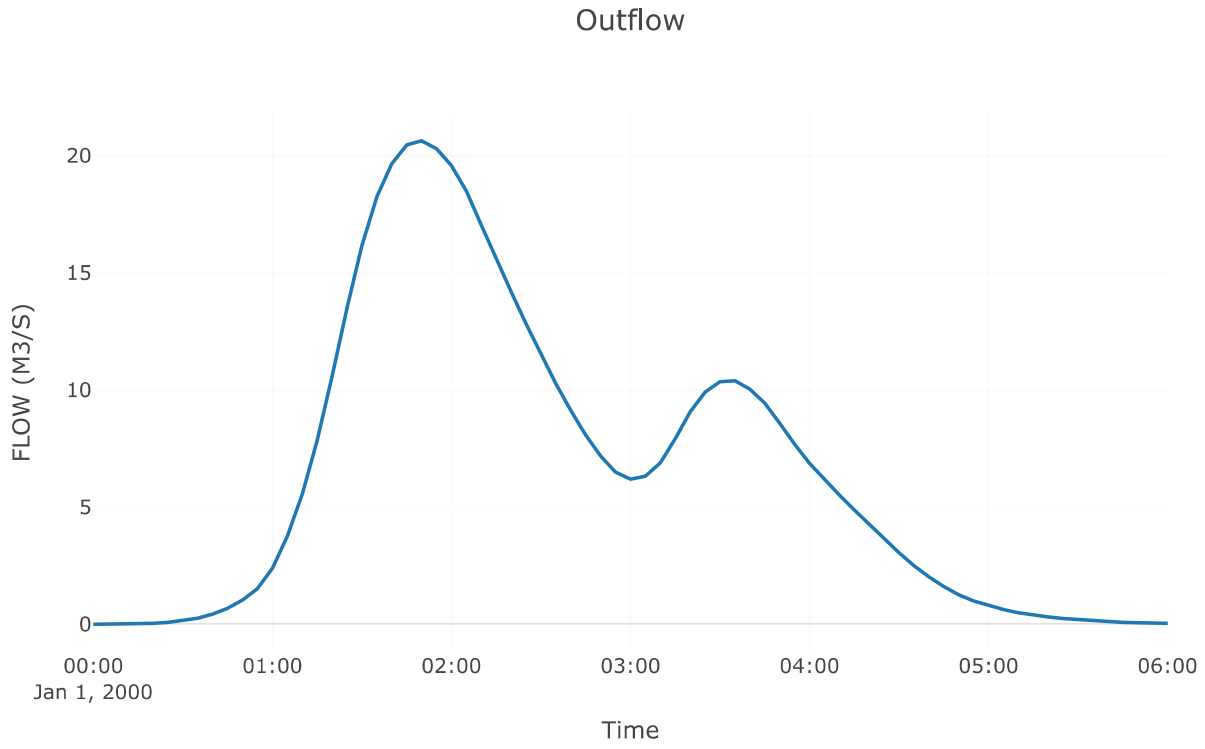

Outflow
FLOW (M3/S)
0
2
4
6
8
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

Junction: Junction-3

Results: Junction-3

Peak Discharge (M3/S)	20.63
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	79.88





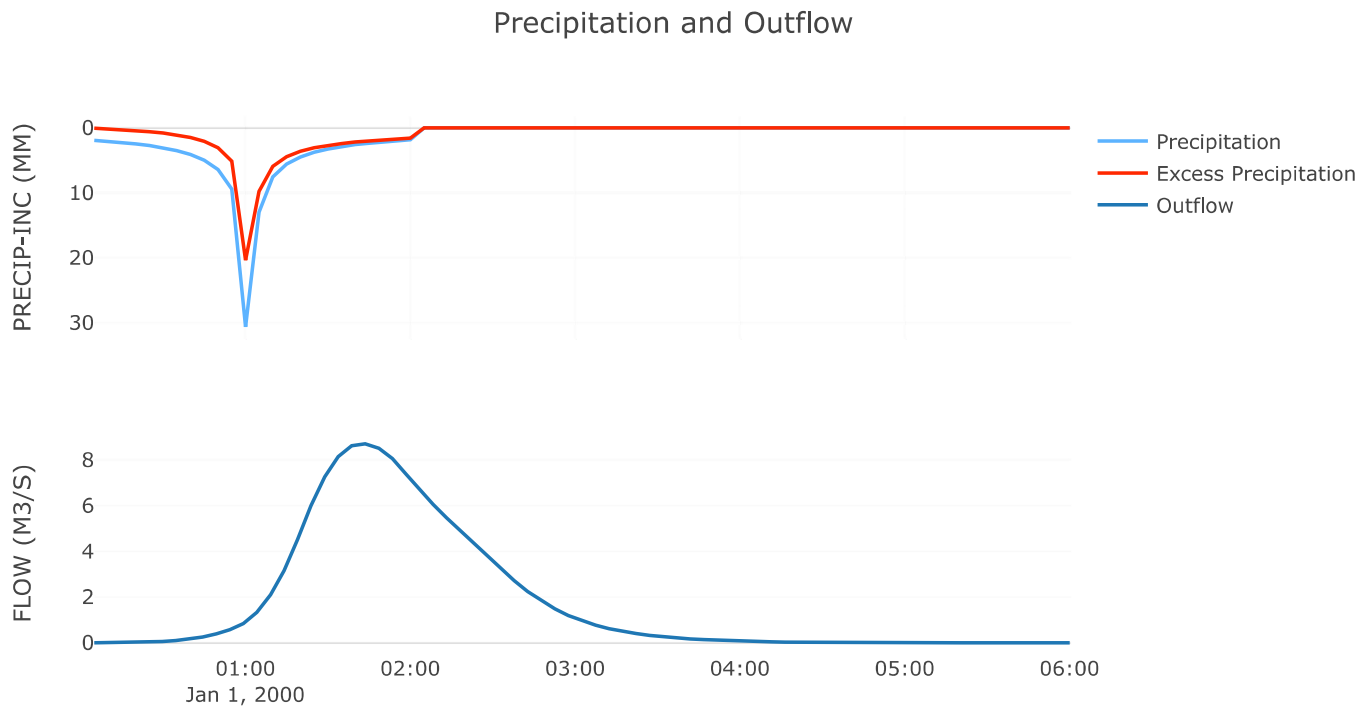
Subbasin: C1

Area (KM2) : 0.49
Latitude Degrees : 39.92
Longitude Degrees : -0.12
Downstream : Junction - 4

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	76.34
Initial Abstraction	0

Transform: Scs	
Lag	35.1
Unitgraph Type	Standard

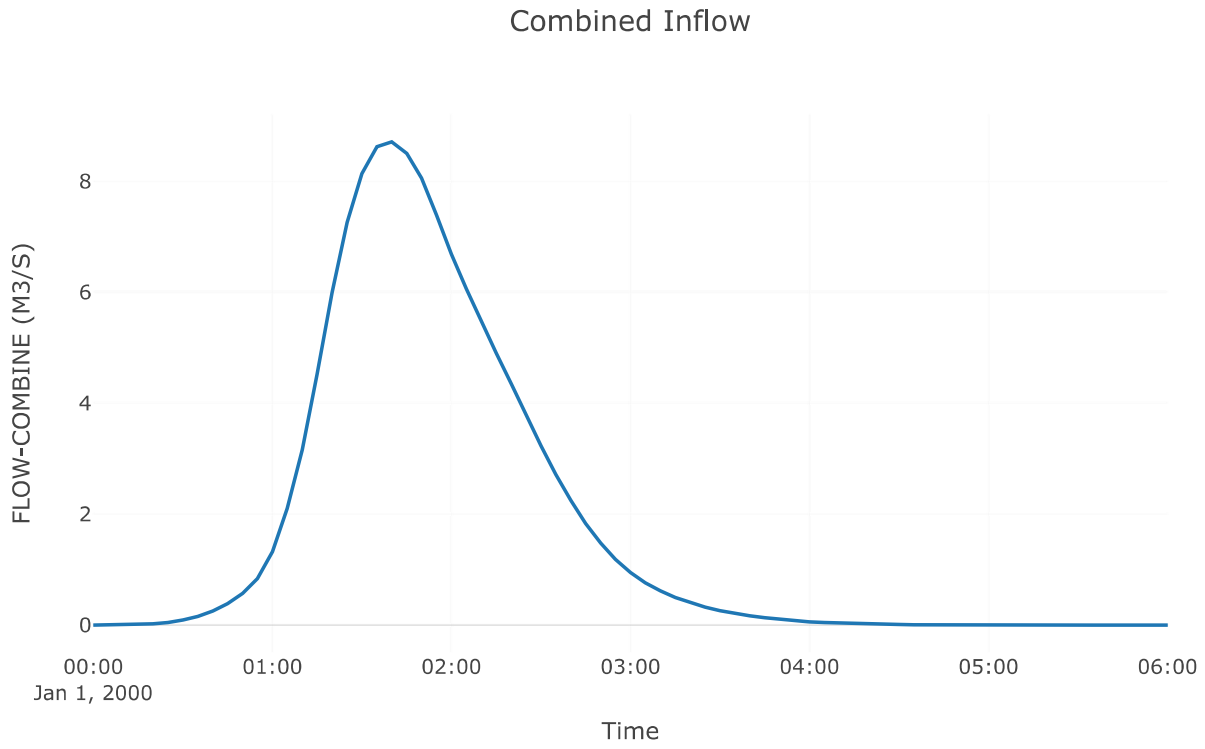
Results: C1	
Peak Discharge (M3/S)	8.71
Time of Peak Discharge	01Jan2000, 01:40
Volume (MM)	76.88
Precipitation Volume (M3)	60994.66
Loss Volume (M3)	23544.06
Excess Volume (M3)	37450.6
Direct Runoff Volume (M3)	37450.6
Baseflow Volume (M3)	0

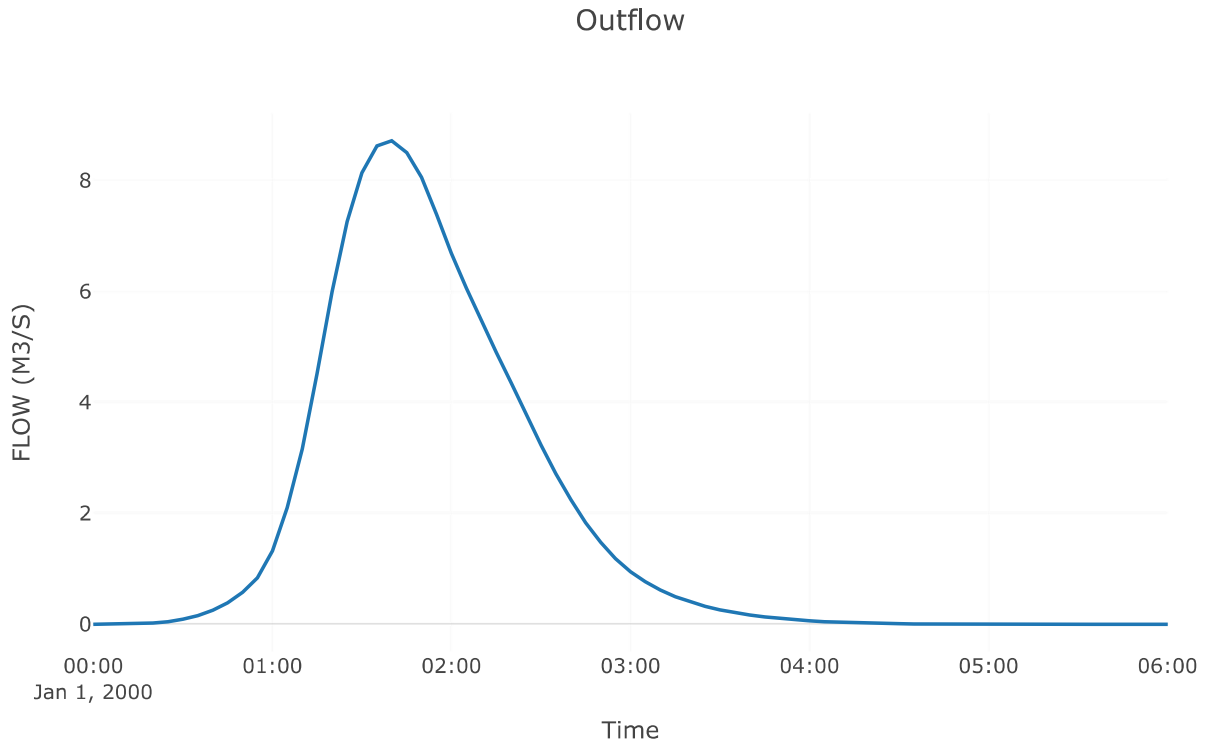


Junction: Junction-4

Results: Junction-4

Peak Discharge (M3/S)	8.71
Time of Peak Discharge	01Jan2000, 01:40
Volume (MM)	76.88





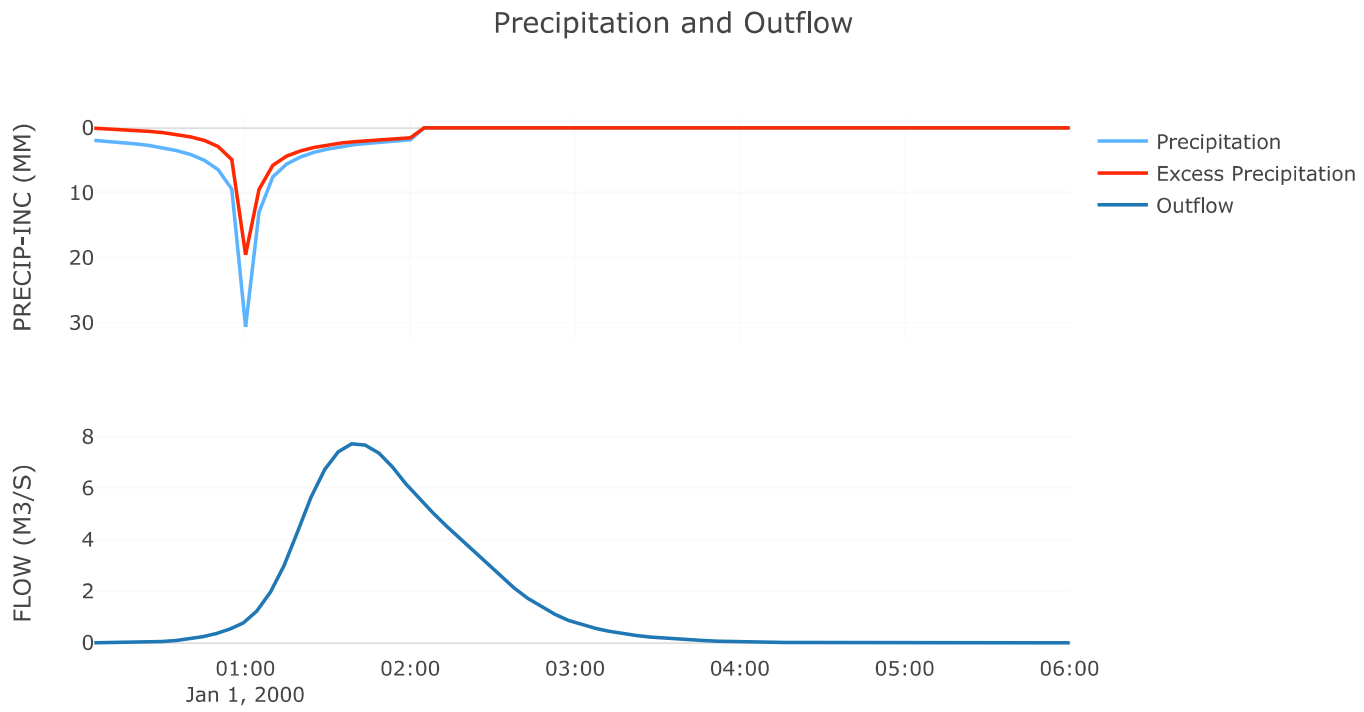
Subbasin: D3

Area (KM2) : 0.43
Latitude Degrees : 39.92
Longitude Degrees : -0.12
Downstream : Junction - 5

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	74.53
Initial Abstraction	0

Transform: Scs	
Lag	33.1
Unitgraph Type	Standard

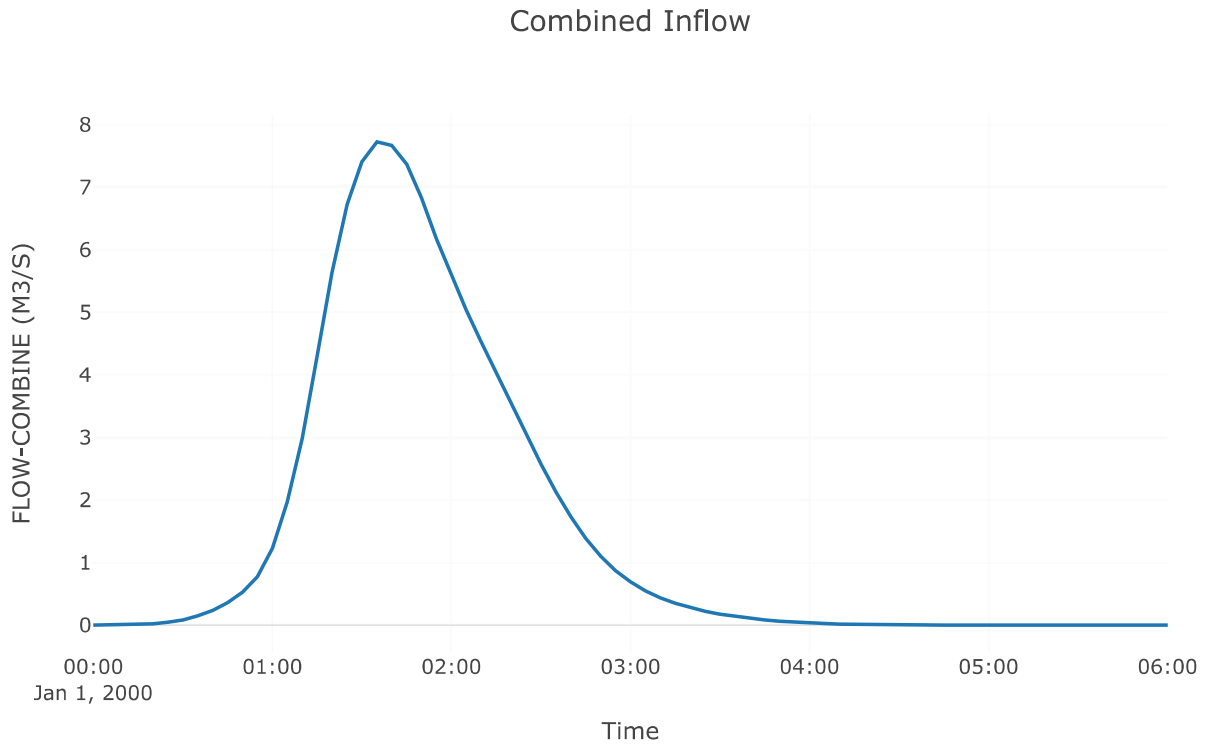
Results: D3	
Peak Discharge (M3/S)	7.73
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	73.95
Precipitation Volume (M3)	54370.52
Loss Volume (M3)	22259.4
Excess Volume (M3)	32111.13
Direct Runoff Volume (M3)	32111.13
Baseflow Volume (M3)	0

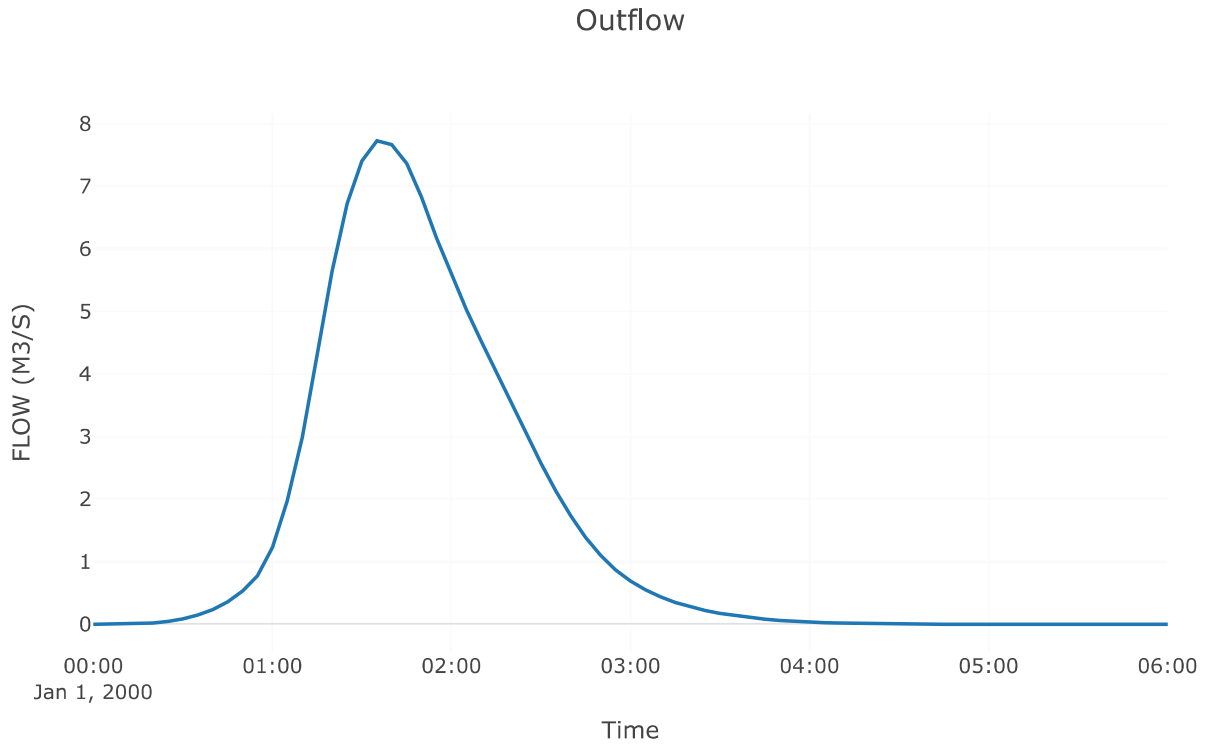


Junction: Junction-5

Results: Junction-5

Peak Discharge (M3/S)	7.73
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	73.95





Project: Uhi 2
Simulation Run: T500
Simulation Start: 31 December 1999, 24:00
Simulation End: 1 January 2000, 06:00

HMS Version: 4.12
Executed: 26 January 2026, 20:30

Global Parameter Summary - Subbasin

Location

Element Name	Longitude Degrees	Latitude Degrees
B2	-0.11	39.93
B1	-0.13	39.94
A1	-0.11	39.93
C1	-0.12	39.92
D3	-0.12	39.92

Area (KM2)

Element Name	Area (KM2)
B2	0.65
B1	0.48
A1	0.6
C1	0.49
D3	0.43

Downstream

Element Name	Downstream
B2	Junction - 3
B1	Junction - 1
A1	Junction - 3
C1	Junction - 4
D3	Junction - 5

Loss Rate: Scs

Element Name	Percent Impervious Area	Curve Number	Initial Abstraction
B2	0	77.34	0
B1	0	76.54	0
A1	0	80.23	0
C1	0	76.34	0
D3	0	74.53	0

Transform: Scs

Element Name	Lag	Unitgraph Type
B2	44.84	Standard
B1	32.5	Standard
A1	43.41	Standard
C1	35.1	Standard
D3	33.1	Standard

Global Parameter Summary - Reach

Downstream

Element Name	Downstream
Reach - 2	Junction - 3

Route: Lag

Element Name	Method	Initial Variable	Lag
Reach - 2	Lag	Combined Inflow	120

Global Results Summary

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
B2	0.65	15.42	01Jan2000, 01:50	117.34
B1	0.48	13.56	01Jan2000, 01:35	115.71
Junction - 1	0.48	13.56	01Jan2000, 01:35	115.71
A1	0.6	15.25	01Jan2000, 01:45	123.34
Reach - 2	0.48	13.56	01Jan2000, 03:35	115.62
Junction - 3	1.74	30.64	01Jan2000, 01:50	118.95
C1	0.49	13.08	01Jan2000, 01:40	115.3
Junction - 4	0.49	13.08	01Jan2000, 01:40	115.3
D3	0.43	11.72	01Jan2000, 01:35	111.66
Junction - 5	0.43	11.72	01Jan2000, 01:35	111.66

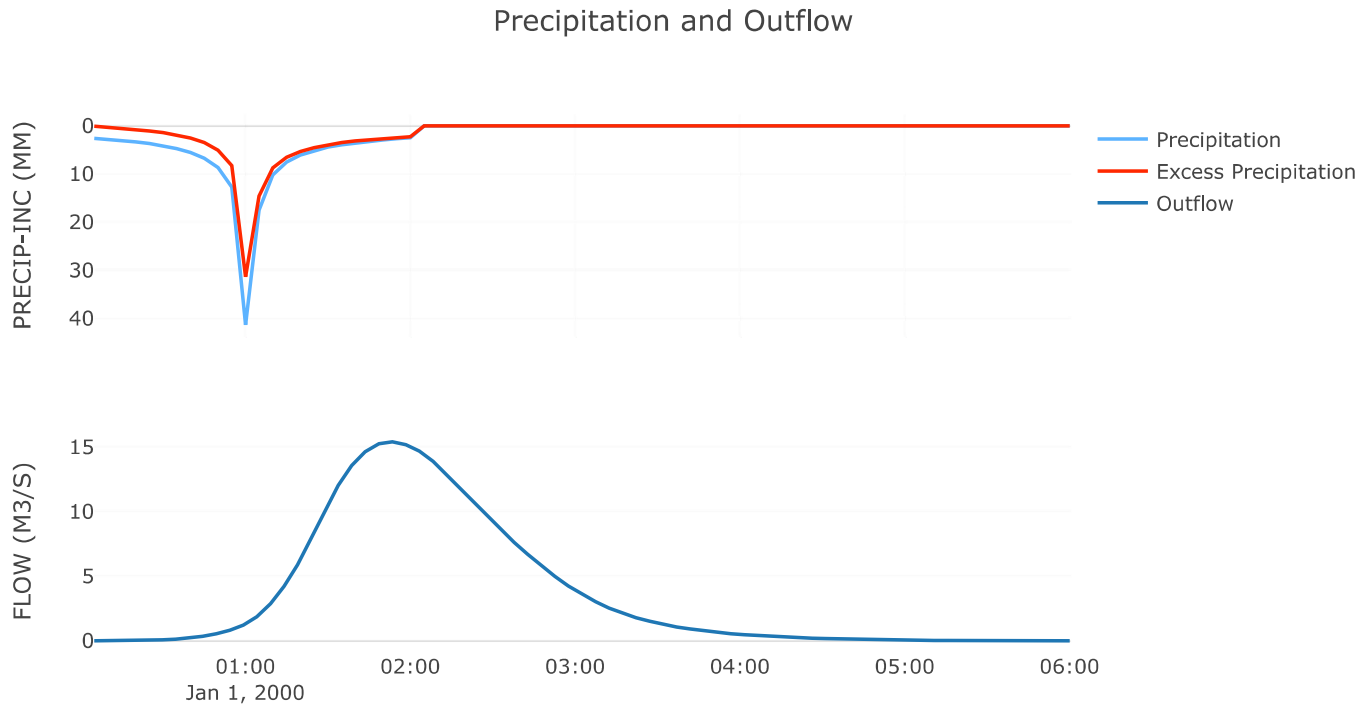
Subbasin: B2

Area (KM2) : 0.65
Latitude Degrees : 39.93
Longitude Degrees : -0.11
Downstream : Junction - 3

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	77.34
Initial Abstraction	0

Transform: Scs	
Lag	44.84
Unitgraph Type	Standard

Results: B2	
Peak Discharge (M3/S)	15.42
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	117.34
Precipitation Volume (M3)	1.11E5
Loss Volume (M3)	33796.52
Excess Volume (M3)	76752.92
Direct Runoff Volume (M3)	76752.92
Baseflow Volume (M3)	0



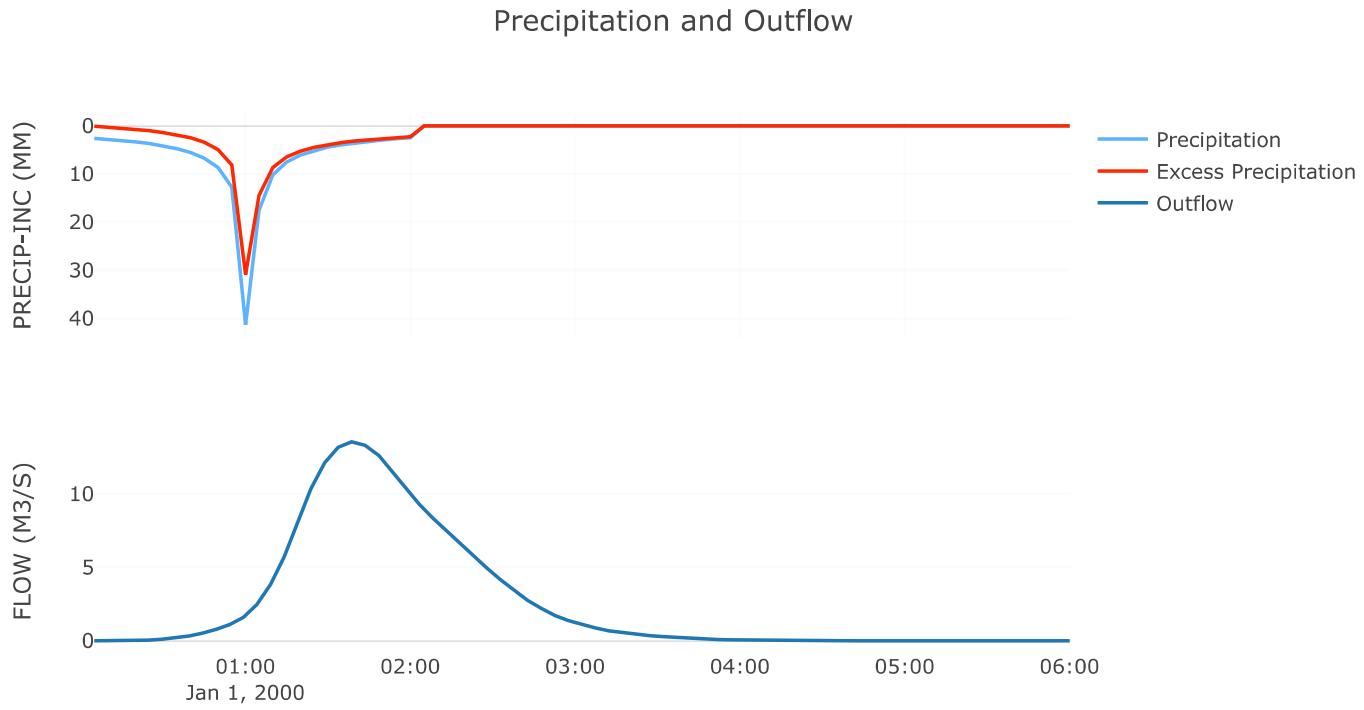
Subbasin: B1

Area (KM2) : 0.48
Latitude Degrees : 39.94
Longitude Degrees : -0.13
Downstream : Junction - 1

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	76.54
Initial Abstraction	0

Transform: Scs	
Lag	32.5
Unitgraph Type	Standard

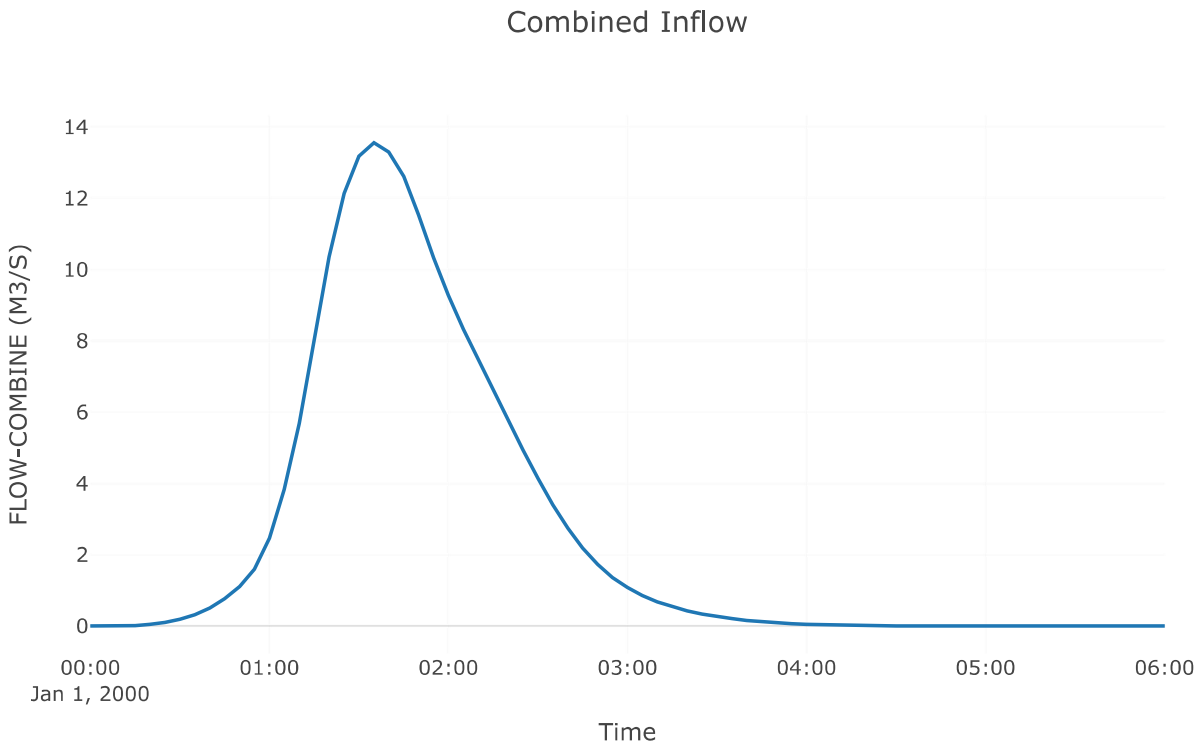
Results: B1	
Peak Discharge (M3/S)	13.56
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	115.71
Precipitation Volume (M3)	80938.89
Loss Volume (M3)	25525.55
Excess Volume (M3)	55413.34
Direct Runoff Volume (M3)	55413.34
Baseflow Volume (M3)	0

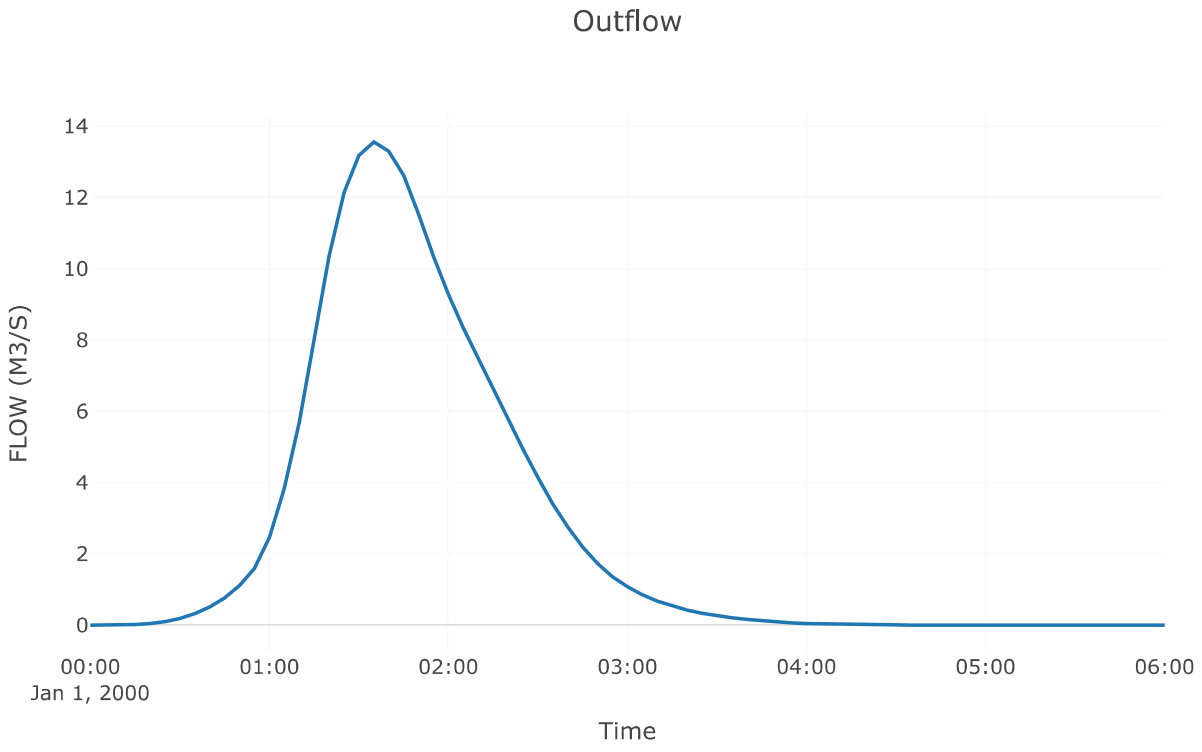


Junction: Junction-1

Downstream : Reach - 2

Results: Junction-1	
Peak Discharge (M3/S)	13.56
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	115.71


Combined Inflow
FLOW-COMBINE (M3/S)
14
12
10
8
6
4
2
0
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time


Outflow
FLOW (M3/S)
14
12
10
8
6
4
2
0
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

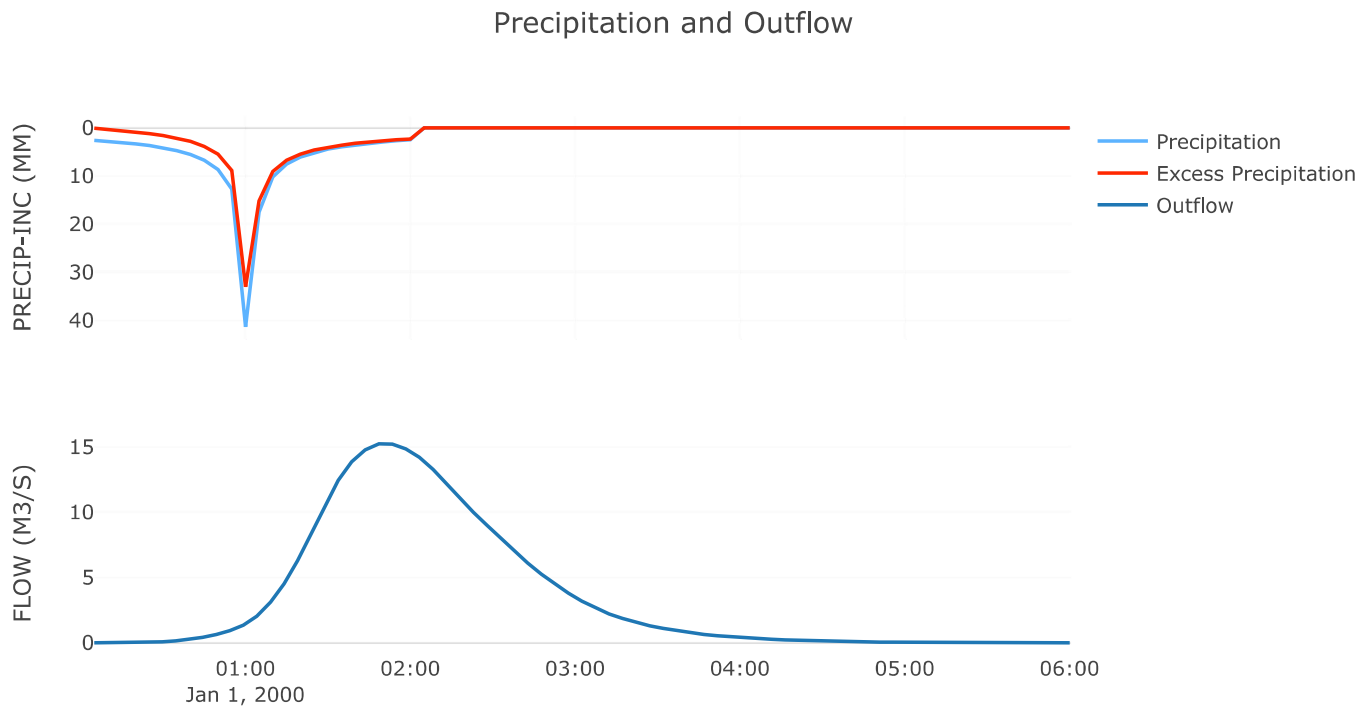
Subbasin: A1

Area (KM2) : 0.6
Latitude Degrees : 39.93
Longitude Degrees : -0.11
Downstream : Junction - 3

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	80.23
Initial Abstraction	0

Transform: Scs	
Lag	43.41
Unitgraph Type	Standard

Results: A1	
Peak Discharge (M3/S)	15.25
Time of Peak Discharge	01Jan2000, 01:45
Volume (MM)	123.34
Precipitation Volume (M3)	1.02E5
Loss Volume (M3)	27610.49
Excess Volume (M3)	74556.06
Direct Runoff Volume (M3)	74556.06
Baseflow Volume (M3)	0

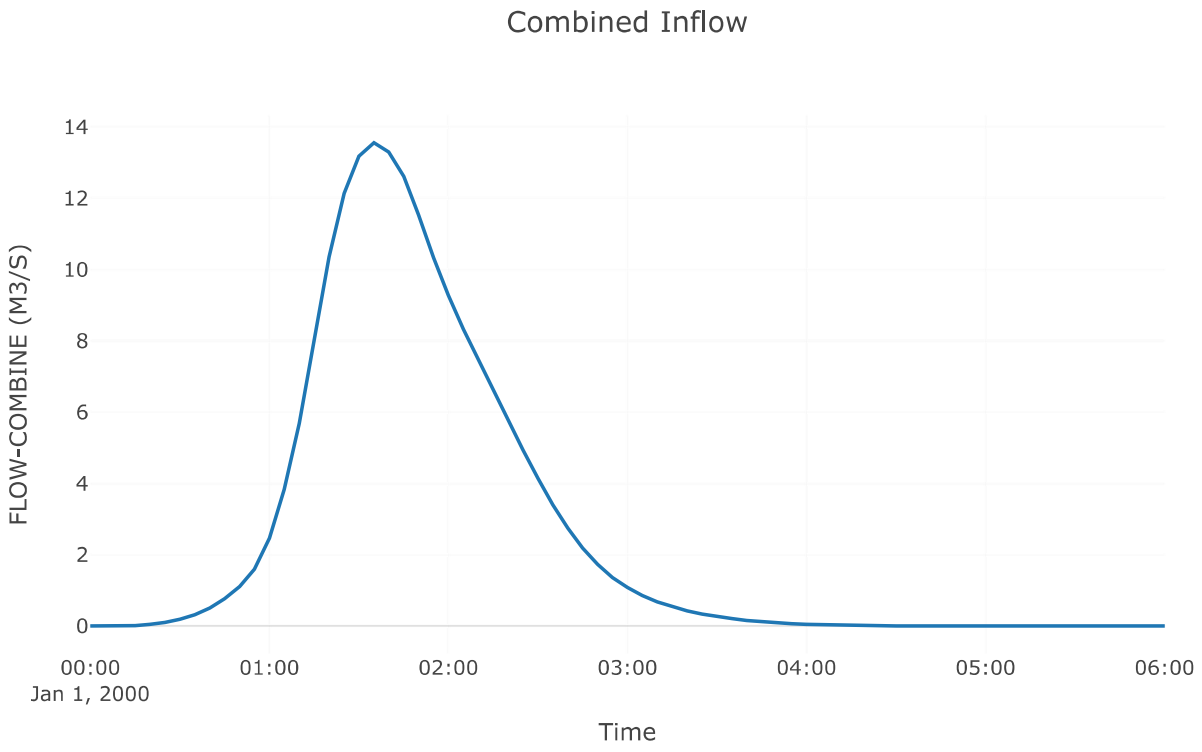


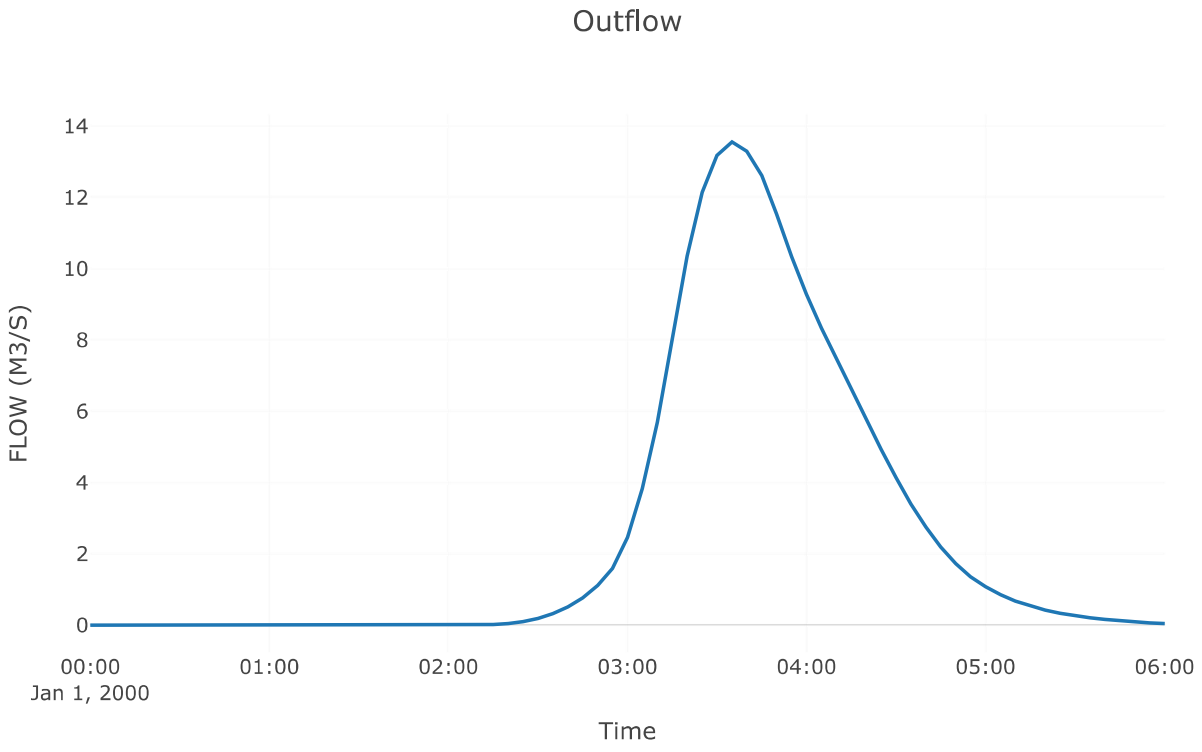
Reach: Reach-2

Downstream : Junction - 3

Route: Lag	
Method	Lag
Initial Variable	Combined Inflow
Lag	120

Results: Reach-2	
Peak Discharge (M3/S)	13.56
Time of Peak Discharge	01Jan2000, 03:35
Volume (MM)	115.62
Peak Inflow (M3/S)	13.56
Inflow Volume (M3)	55413.34

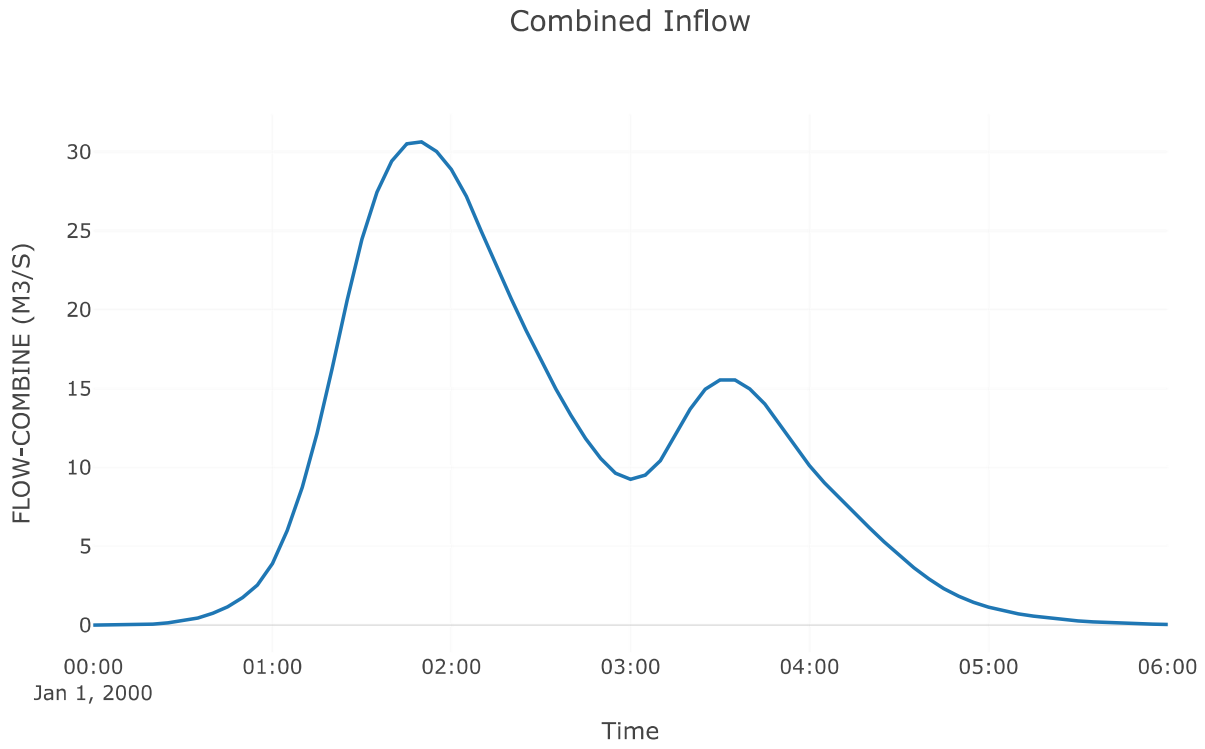

Combined Inflow
FLOW-COMBINE (M3/S)
14
12
10
8
6
4
2
0
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

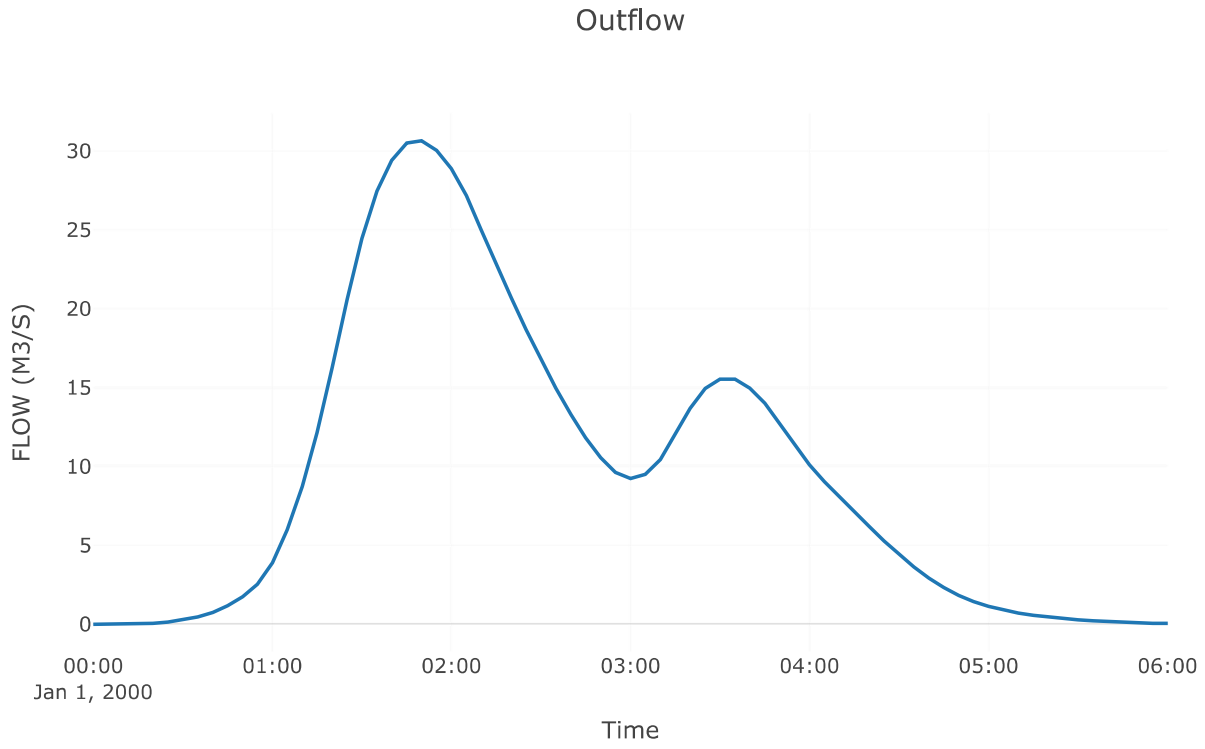

Outflow
FLOW (M3/S)
14
12
10
8
6
4
2
0
00:00
Jan 1, 2000
01:00
02:00
03:00
04:00
05:00
06:00
Time

Junction: Junction-3

Results: Junction-3

Peak Discharge (M3/S)	30.64
Time of Peak Discharge	01Jan2000, 01:50
Volume (MM)	118.95





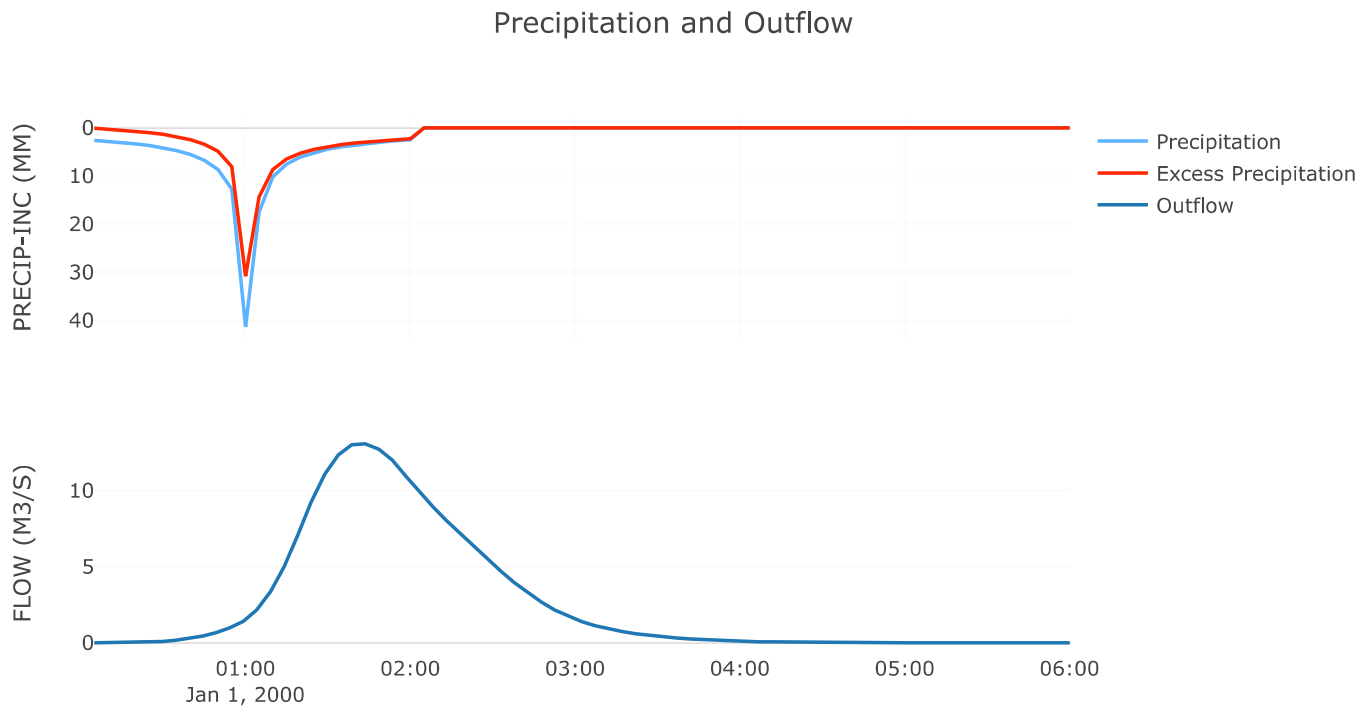
Subbasin: C1

Area (KM2) : 0.49
Latitude Degrees : 39.92
Longitude Degrees : -0.12
Downstream : Junction - 4

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	76.34
Initial Abstraction	0

Transform: Scs	
Lag	35.1
Unitgraph Type	Standard

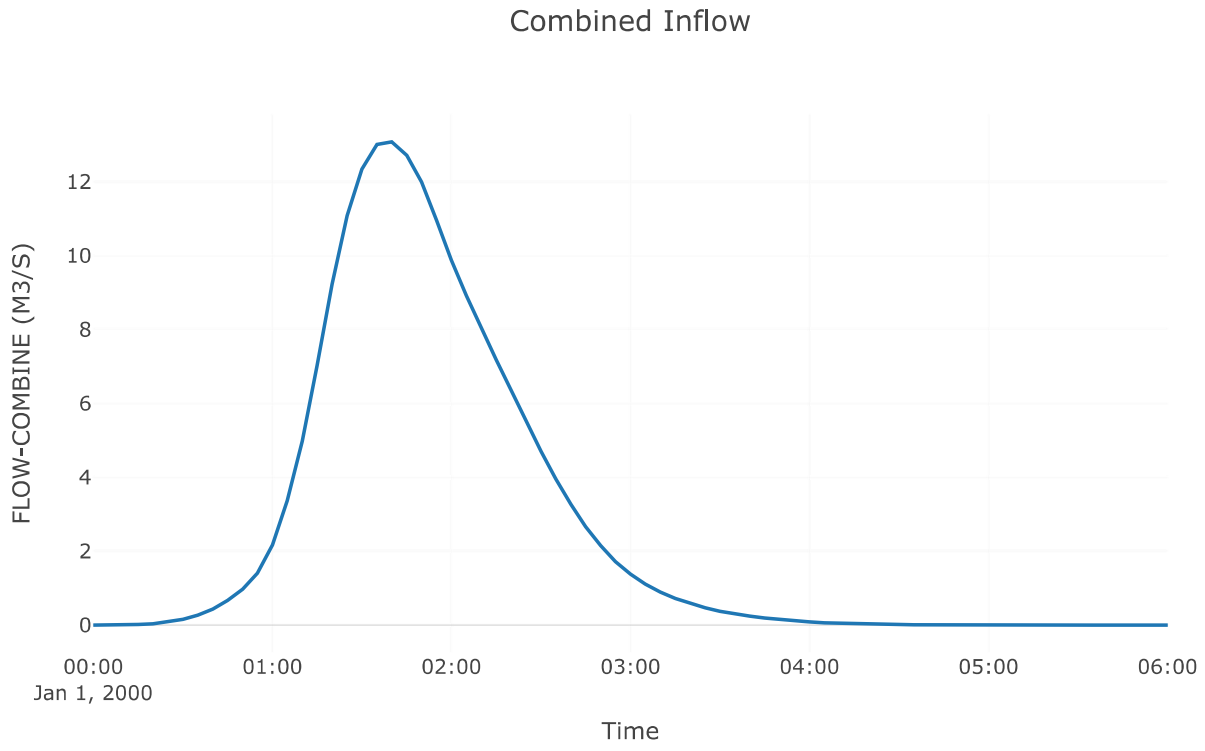
Results: C1	
Peak Discharge (M3/S)	13.08
Time of Peak Discharge	01Jan2000, 01:40
Volume (MM)	115.3
Precipitation Volume (M3)	82324.77
Loss Volume (M3)	26160.42
Excess Volume (M3)	56164.35
Direct Runoff Volume (M3)	56164.35
Baseflow Volume (M3)	0

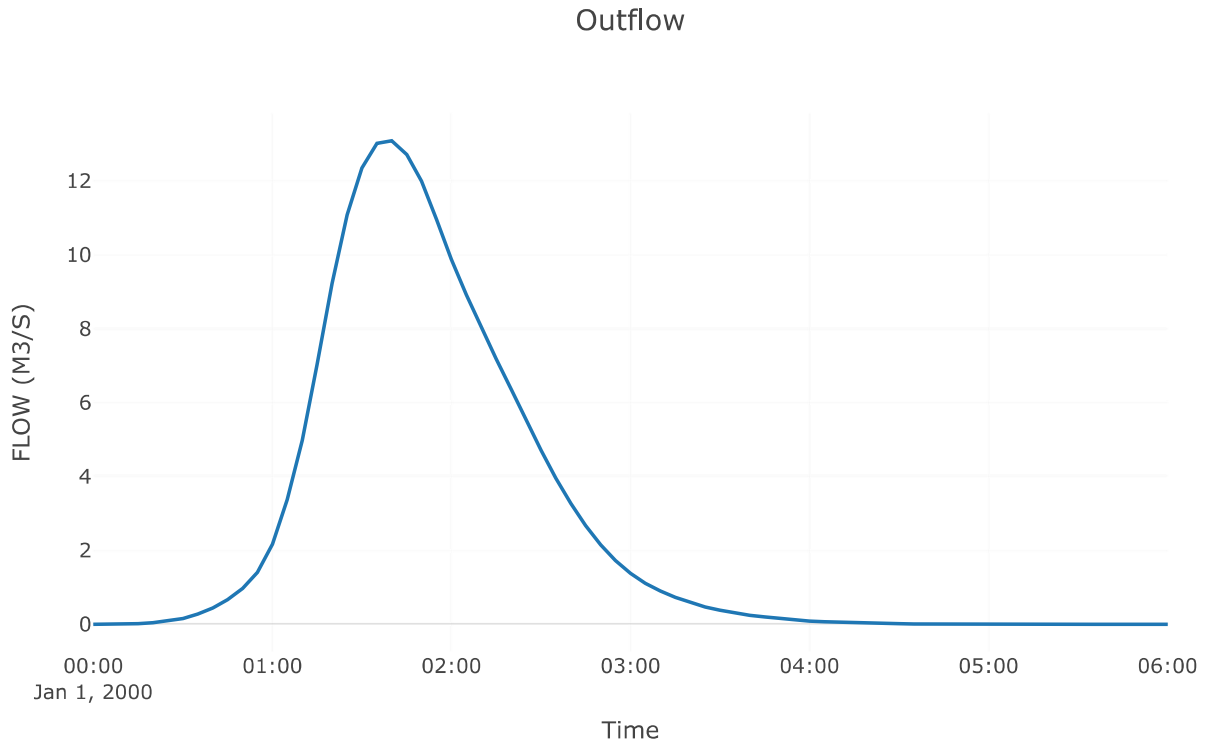


Junction: Junction-4

Results: Junction-4

Peak Discharge (M3/S)	13.08
Time of Peak Discharge	01Jan2000, 01:40
Volume (MM)	115.3





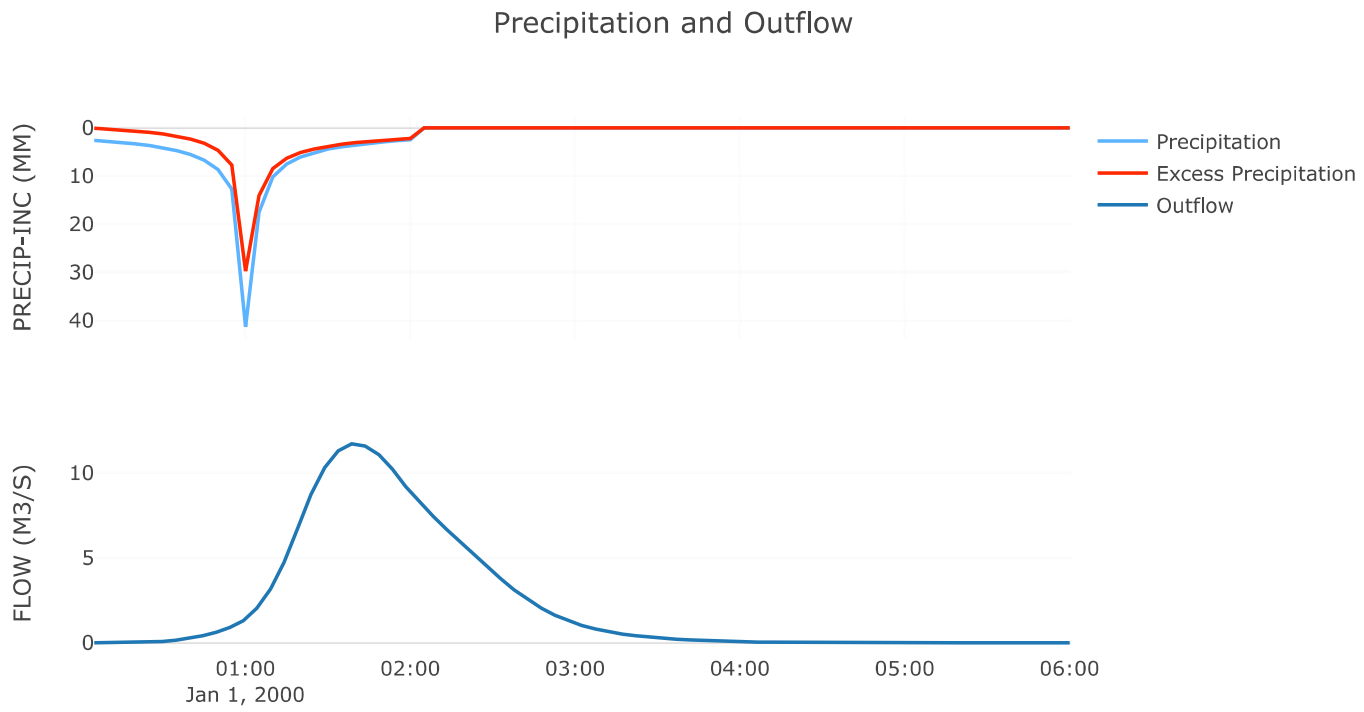
Subbasin: D3

Area (KM2) : 0.43
Latitude Degrees : 39.92
Longitude Degrees : -0.12
Downstream : Junction - 5

Loss Rate: Scs	
Percent Impervious Area	0
Curve Number	74.53
Initial Abstraction	0

Transform: Scs	
Lag	33.1
Unitgraph Type	Standard

Results: D3	
Peak Discharge (M3/S)	11.72
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	111.66
Precipitation Volume (M3)	73384.14
Loss Volume (M3)	24900.74
Excess Volume (M3)	48483.4
Direct Runoff Volume (M3)	48483.4
Baseflow Volume (M3)	0



Junction: Junction-5

Results: Junction-5

Peak Discharge (M3/S)	11.72
Time of Peak Discharge	01Jan2000, 01:35
Volume (MM)	111.66

