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 Hydrograph separation by the local minimum method

Entiat River near Entiat WA (USGS-NWIS record)

Station ID = 12452990

Drainage area = 419.00 square miles

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 Period ending in 1996

interval = 7 days

	Mean stream- flow (ft3/s)	Mean base flow (ft3/s)	Mean surface runoff (ft3/s)	Total stream- flow (in)	Total base flow (in)	Total surface runoff (in)	BF/ stream- flow (%)	Base flow (ft3/s/ mi2)
Oct.	-1.00	-1.00	-1.00	-1.000	-1.000	-1.000	-1.00	-1.000
Nov.	-1.00	-1.00	-1.00	-1.000	-1.000	-1.000	-1.00	-1.000
Dec.	-1.00	-1.00	-1.00	-1.000	-1.000	-1.000	-1.00	-1.000
Jan.	-1.00	-1.00	-1.00	-1.000	-1.000	-1.000	-1.00	-1.000
Feb.	-1.00	-1.00	-1.00	-1.000	-1.000	-1.000	-1.00	-1.000
Mar.	-1.00	-1.00	-1.00	-1.000	-1.000	-1.000	-1.00	-1.000
Apr.	1090.37	773.74	316.62	2.903	2.060	0.843	70.96	1.847
May	1235.52	1047.61	187.91	3.400	2.883	0.517	84.79	2.500
June	1946.33	1646.29	300.04	5.183	4.384	0.799	84.58	3.929
July	1166.03	993.45	172.58	3.208	2.734	0.475	85.20	2.371
Aug.	315.06	296.24	18.83	0.867	0.815	0.052	94.02	0.707
Sept.	177.07	163.64	13.42	0.471	0.436	0.036	92.42	0.391
	964.77	795.86	168.91	16.870	13.916	2.954	82.49	1.899

Above summary information based on 197 days of good base-flow values.

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 Hydrograph separation by the local minimum method

Entiat River near Entiat WA (Keystone)

Station ID = 12452990

Drainage area = 419.00 square miles

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 Period ending in 1997

interval = 7 days

	Mean stream- flow (ft3/s)	Mean base flow (ft3/s)	Mean surface runoff (ft3/s)	Total stream- flow (in)	Total base flow (in)	Total surface runoff (in)	BF/ stream- flow (%)	Base flow (ft3/s/ mi2)
Oct.	152.29	143.97	8.32	0.419	0.396	0.023	94.53	0.344
Nov.	157.90	139.32	18.58	0.420	0.371	0.049	88.23	0.332
Dec.	140.61	110.08	30.53	0.387	0.303	0.084	78.29	0.263
Jan.	181.90	116.89	65.02	0.501	0.322	0.179	64.26	0.279
Feb.	201.61	180.86	20.75	0.501	0.449	0.052	89.71	0.432
Mar.	385.32	323.81	61.52	1.060	0.891	0.169	84.03	0.773

Apr.	698.20	575.70	122.50	1.859	1.533	0.326	82.45	1.374
May	2204.84	1397.98	806.86	6.067	3.847	2.220	63.40	3.336
June	2559.33	1972.19	587.14	6.815	5.251	1.563	77.06	4.707
July	1093.42	990.93	102.49	3.009	2.727	0.282	90.63	2.365
Aug.	366.03	360.01	6.02	1.007	0.991	0.017	98.36	0.859
Sept.	231.63	210.64	20.99	0.617	0.561	0.056	90.94	0.503
	699.49	544.53	154.96	22.661	17.641	5.020	77.85	1.300

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Entiat River near Entiat WA (Keystone)

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Period ending in 1998

interval = 7 days

	Mean stream- flow (ft3/s)	Mean base flow (ft3/s)	Mean surface runoff (ft3/s)	Total stream- flow (in)	Total base flow (in)	Total surface runoff (in)	BF/ stream- flow (%)	Base flow (ft3/s/ mi2)
Oct.	300.90	254.27	46.63	0.828	0.700	0.128	84.50	0.607
Nov.	265.00	240.80	24.20	0.706	0.641	0.064	90.87	0.575
Dec.	171.77	156.69	15.09	0.473	0.431	0.042	91.22	0.374
Jan.	153.03	142.34	10.69	0.421	0.392	0.029	93.01	0.340
Feb.	197.46	181.62	15.84	0.491	0.451	0.039	91.98	0.433
Mar.	302.84	262.14	40.70	0.833	0.721	0.112	86.56	0.626
Apr.	557.93	511.50	46.43	1.486	1.362	0.124	91.68	1.221
May	2276.77	1711.64	565.13	6.265	4.710	1.555	75.18	4.085
June	1585.17	1404.55	180.61	4.221	3.740	0.481	88.61	3.352
July	591.29	522.13	69.16	1.627	1.437	0.190	88.30	1.246
Aug.	220.06	214.01	6.06	0.606	0.589	0.017	97.25	0.511
Sept.	133.73	130.32	3.41	0.356	0.347	0.009	97.45	0.311
	565.21	479.07	86.14	18.311	15.520	2.791	84.76	1.143

Hydrograph separation by the local minimum method

Entiat River near Entiat WA (Keystone)

Station ID = 12452990

Drainage area = 419.00 square miles

Period ending in 1999

interval = 7 days

Mean stream-	Mean base	Mean surface	Total stream-	Total base	Total surface	BF/ stream-	Base flow
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	flow (ft3/s)	flow (ft3/s)	runoff (ft3/s)	flow (in)	flow (in)	runoff (in)	flow (%)	(ft3/s/ mi2)
Oct.	112.32	110.84	1.49	0.309	0.305	0.004	98.68	0.265
Nov.	132.77	112.38	20.39	0.354	0.299	0.054	84.64	0.268
Dec.	129.58	105.69	23.89	0.357	0.291	0.066	81.56	0.252
Jan.	184.45	153.94	30.51	0.508	0.424	0.084	83.46	0.367
Feb.	170.71	160.03	10.69	0.424	0.398	0.027	93.74	0.382
Mar.	278.71	227.31	51.40	0.767	0.625	0.141	81.56	0.543
Apr.	564.13	501.92	62.21	1.502	1.337	0.166	88.97	1.198
May	1250.61	1019.39	231.22	3.441	2.805	0.636	81.51	2.433
June	2674.00	1884.34	789.66	7.120	5.018	2.103	70.47	4.497
July	1681.61	1422.65	258.96	4.627	3.914	0.713	84.60	3.395
Aug.	655.19	627.62	27.57	1.803	1.727	0.076	95.79	1.498
Sept.	231.30	227.21	4.09	0.616	0.605	0.011	98.23	0.542
	673.73	547.80	125.93	21.827	17.747	4.080	81.31	1.307

Hydrograph separation by the local minimum method

Entiat River near Entiat WA (Keystone)

Station ID = 12452990

Drainage area = 419.00 square miles

Period ending in 2000

interval = 7 days

	Mean stream- flow (ft3/s)	Mean base flow (ft3/s)	Mean surface runoff (ft3/s)	Total stream- flow (in)	Total base flow (in)	Total surface runoff (in)	BF/ stream- flow (%)	Base flow (ft3/s/ mi2)
Oct.	173.97	163.04	10.93	0.479	0.449	0.030	93.72	0.389
Nov.	412.13	200.07	212.06	1.097	0.533	0.565	48.55	0.477
Dec.	316.06	274.55	41.52	0.870	0.755	0.114	86.86	0.655
Jan.	234.87	191.91	42.96	0.646	0.528	0.118	81.71	0.458
Feb.	198.93	182.99	15.94	0.512	0.471	0.041	91.99	0.437
Mar.	250.23	246.32	3.90	0.689	0.678	0.011	98.44	0.588
Apr.	787.43	692.39	95.04	2.097	1.844	0.253	87.93	1.652
May	1220.55	906.73	313.82	3.358	2.495	0.863	74.29	2.164
June	1541.00	1349.98	191.02	4.103	3.595	0.509	87.60	3.222
July	715.55	663.41	52.14	1.969	1.825	0.143	92.71	1.583
Aug.	259.32	248.11	11.21	0.714	0.683	0.031	95.68	0.592
Sept.	162.53	152.72	9.82	0.433	0.407	0.026	93.96	0.364
	522.27	439.01	83.26	16.966	14.262	2.705	84.06	1.048

Hydrograph separation by the local minimum method

Entiat River near Entiat WA (Keystone)

Station ID = 12452990  
 Drainage area = 419.00 square miles

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 Period ending in 2001 interval = 7 days

	Mean stream- flow (ft3/s)	Mean base flow (ft3/s)	Mean surface runoff (ft3/s)	Total stream- flow (in)	Total base flow (in)	Total surface runoff (in)	BF/ stream- flow (%)	Base flow (ft3/s/ mi2)
Oct.	151.13	139.67	11.46	0.416	0.384	0.032	92.42	0.333
Nov.	141.43	131.72	9.71	0.377	0.351	0.026	93.13	0.314
Dec.	118.39	92.36	26.02	0.326	0.254	0.072	78.02	0.220
Jan.	108.29	89.33	18.96	0.298	0.246	0.052	82.49	0.213
Feb.	92.07	82.60	9.47	0.229	0.205	0.024	89.72	0.197
Mar.	125.19	115.52	9.68	0.344	0.318	0.027	92.27	0.276
Apr.	165.13	143.65	21.49	0.440	0.382	0.057	86.99	0.343
May	672.65	430.63	242.01	1.851	1.185	0.666	64.02	1.028
June	497.03	405.59	91.44	1.323	1.080	0.243	81.60	0.968
July	218.16	204.53	13.64	0.600	0.563	0.038	93.75	0.488
Aug.	122.94	115.39	7.54	0.338	0.318	0.021	93.87	0.275
Sept.	87.67	83.42	4.25	0.233	0.222	0.011	95.16	0.199
	209.14	170.01	39.12	6.775	5.508	1.268	81.29	0.406

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 Annual base-flow summary

Entiat River near Entiat WA (Keystone)  
 Station ID = 12452990  
 Drainage area = 419.00 square miles

Local minimum method

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 Year starts in October  
 Year ends in September

Period ending	in	ft3/s	ft3/s/ mi2	% of stream- flow
1996	-1.000	-1.00	-1.000	-1.00
1997	17.641	544.53	1.300	77.85
1998	15.520	479.07	1.143	84.76
1999	17.747	547.80	1.307	81.31
2000	14.262	439.01	1.048	84.06
2001	5.508	170.01	0.406	81.29
median	15.520	479.07	1.143	81.31

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Annual base-flow summary ordered by frequency

Entiat River near Entiat WA (Keystone)  
Station ID = 12452990  
Drainage area = 419.00 square miles

Local minimum method

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Year starts in October  
Year ends in September

Cum dist	in	ft3/s/ mi2	year
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-1.0	-1.000	-1.000	1996
16.7	5.508	0.406	2001
33.3	14.262	1.048	2000
50.0	15.520	1.143	1998
66.7	17.641	1.300	1997
83.3	17.747	1.307	1999

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Seasonal-distribution table

Entiat River near Entiat WA (Keystone)  
Station ID = 12452990  
Drainage area = 419.00 square miles

Local minimum method

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Year starts in October  
Year ends in September

Month	Base flow (in)	Runoff (in)
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October	0.447	0.043
November	0.439	0.152
December	0.407	0.075
January	0.382	0.093
February	0.395	0.036
March	0.647	0.092
April	1.420	0.295
May	2.987	1.076
June	3.845	0.950
July	2.200	0.307
August	0.854	0.035
September	0.430	0.025

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Flow duration table for total flow, local minimum method  
at Entiat River near Entiat WA (Keystone) (1996-2001)

Lower class limit	Cases equal or exceeding lower limit and less than upper limit		Cases equal or exceeding lower class limit	
	Cases	Percent	Cases	Percent
0.00	0	0.00	2023	100.00
49.00	0	0.00	2023	100.00
57.00	2	0.10	2023	100.00
66.00	2	0.10	2021	99.90
75.00	26	1.29	2019	99.80
87.00	36	1.78	1993	98.52
100.00	114	5.64	1957	96.74
120.00	79	3.91	1843	91.10
130.00	161	7.96	1764	87.20
150.00	268	13.25	1603	79.24
180.00	111	5.49	1335	65.99
200.00	172	8.50	1224	60.50
230.00	116	5.73	1052	52.00
270.00	91	4.50	936	46.27
310.00	71	3.51	845	41.77
360.00	73	3.61	774	38.26
410.00	46	2.27	701	34.65
470.00	52	2.57	655	32.38
540.00	52	2.57	603	29.81
630.00	42	2.08	551	27.24
720.00	60	2.97	509	25.16
830.00	56	2.77	449	22.19
950.00	53	2.62	393	19.43
1100.00	49	2.42	340	16.81
1300.00	76	3.76	291	14.38
1500.00	51	2.52	215	10.63
1700.00	34	1.68	164	8.11
1900.00	47	2.32	130	6.43
2200.00	21	1.04	83	4.10
2600.00	23	1.14	62	3.06
2900.00	19	0.94	39	1.93
3400.00	13	0.64	20	0.99
3900.00	6	0.30	7	0.35
4500.00	1	0.05	1	0.05
5200.00	0	0.00	0	0.00
100000.00	0	0.00	0	0.00

Flow duration table for surface runoff, local minimum method  
at Entiat River near Entiat WA (Keystone) (1996-2001)

Lower class limit	Cases equal or exceeding lower limit and less than upper limit		Cases equal or exceeding lower class limit	
	Cases	Percent	Cases	Percent
0.00	418	20.66	2023	100.00
0.10	0	0.00	1605	79.34

0.13	0	0.00	1605	79.34
0.15	5	0.25	1605	79.34
0.18	1	0.05	1600	79.09
0.20	0	0.00	1599	79.04
0.23	1	0.05	1599	79.04
0.27	2	0.10	1598	78.99
0.31	4	0.20	1596	78.89
0.36	0	0.00	1592	78.70
0.41	3	0.15	1592	78.70
0.47	2	0.10	1589	78.55
0.54	2	0.10	1587	78.45
0.63	2	0.10	1585	78.35
0.72	6	0.30	1583	78.25
0.83	3	0.15	1577	77.95
0.95	11	0.54	1574	77.81
1.10	12	0.59	1563	77.26
1.30	8	0.40	1551	76.67
1.50	7	0.35	1543	76.27
1.70	9	0.44	1536	75.93
1.90	18	0.89	1527	75.48
2.20	16	0.79	1509	74.59
2.60	17	0.84	1493	73.80
2.90	26	1.29	1476	72.96
3.40	25	1.24	1450	71.68
3.90	37	1.83	1425	70.44
4.50	26	1.29	1388	68.61
5.20	35	1.73	1362	67.33
6.00	40	1.98	1327	65.60
6.90	42	2.08	1287	63.62
7.90	28	1.38	1245	61.54
9.10	29	1.43	1217	60.16
10.00	66	3.26	1188	58.72
12.00	60	2.97	1122	55.46
14.00	59	2.92	1062	52.50
16.00	54	2.67	1003	49.58
18.00	60	2.97	949	46.91
21.00	35	1.73	889	43.94
24.00	63	3.11	854	42.21
28.00	61	3.02	791	39.10
32.00	46	2.27	730	36.09
37.00	53	2.62	684	33.81
43.00	46	2.27	631	31.19
49.00	48	2.37	585	28.92
57.00	33	1.63	537	26.54
66.00	23	1.14	504	24.91
75.00	35	1.73	481	23.78
87.00	31	1.53	446	22.05
100.00	47	2.32	415	20.51
120.00	20	0.99	368	18.19
130.00	32	1.58	348	17.20
150.00	44	2.17	316	15.62
180.00	18	0.89	272	13.45
200.00	17	0.84	254	12.56
230.00	33	1.63	237	11.72
270.00	26	1.29	204	10.08
310.00	35	1.73	178	8.80
360.00	14	0.69	143	7.07

410.00	15	0.74	129	6.38
470.00	18	0.89	114	5.64
540.00	14	0.69	96	4.75
630.00	8	0.40	82	4.05
720.00	11	0.54	74	3.66
830.00	19	0.94	63	3.11
950.00	11	0.54	44	2.17
1100.00	8	0.40	33	1.63
1300.00	4	0.20	25	1.24
1500.00	8	0.40	21	1.04
1700.00	3	0.15	13	0.64
1900.00	2	0.10	10	0.49
2200.00	4	0.20	8	0.40
2600.00	0	0.00	4	0.20
3400.00	0	0.00	0	0.00
100000.00	0	0.00	0	0.00

Flow duration table for base flow, local minimum method  
at Entiat River near Entiat WA (Keystone) (1996-2001)

Lower class limit	Cases equal or exceeding lower limit and less than upper limit		Cases equal or exceeding lower class limit	
	Cases	Percent	Cases	Percent
0.00	0	0.00	2023	100.00
49.00	0	0.00	2023	100.00
57.00	8	0.40	2023	100.00
66.00	8	0.40	2015	99.60
75.00	52	2.57	2007	99.21
87.00	64	3.16	1955	96.64
100.00	160	7.91	1891	93.48
120.00	113	5.59	1731	85.57
130.00	179	8.85	1618	79.98
150.00	221	10.92	1439	71.13
180.00	98	4.84	1218	60.21
200.00	149	7.37	1120	55.36
230.00	118	5.83	971	48.00
270.00	80	3.95	853	42.17
310.00	62	3.06	773	38.21
360.00	56	2.77	711	35.15
410.00	34	1.68	655	32.38
470.00	85	4.20	621	30.70
540.00	48	2.37	536	26.50
630.00	38	1.88	488	24.12
720.00	63	3.11	450	22.24
830.00	64	3.16	387	19.13
950.00	43	2.13	323	15.97
1100.00	47	2.32	280	13.84
1300.00	104	5.14	233	11.52
1500.00	32	1.58	129	6.38
1700.00	48	2.37	97	4.79
1900.00	33	1.63	49	2.42
2200.00	15	0.74	16	0.79



2600.00	1	0.05	1	0.05
2900.00	0	0.00	0	0.00
100000.00	0	0.00	0	0.00