01100000 MERRIMACK RIVER BELOW CONCORD RIVER AT LOWELL, MA

MERRIMACK RIVER BASIN

LOCATION.--Lat 42°38′45″, long 71°17′56″ referenced to North American Datum of 1927, Middlesex County, Hydrologic Unit 01070002, on right bank, 400 ft downstream from Rt 38 at Lowell, 1,100 ft downstream from Concord River.

DRAINAGE AREA.--4,635 mi^2, of which 214 mi^2 probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: June 1923 to current year. Water-quality records: water years 1954, 1966-74, 1999-2004.

GAGE.--Water-stage recorder with satellite telemeter. Datum of gage is 5.18 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 7, 1934, at Boott Mills, 1,800 ft upstream and 700 ft above mouth of Concord River, in same gage pool and at same datum; gage-height record (provided by Proprietors of the Locks and Canals on Merrimack River) was indicative of flow including that of Concord River.

COOPERATION.--Massachusetts Department of Environmental Protection, Office of Watershed Management; Massachusetts Department of Conservation and Recreation, Water Resources Commission.

REMARKS.--Records good except those for estimated daily discharge, which are poor. Daily discharge includes water released from 210 mi^2 in basins of Sudbury and Nashua Rivers and Lake Cochituate. Flow regulated by powerplants, by Franklin Falls Reservoir since 1942, and by Squam, Newfound, Winnipesaukee, Winnisquam, and other lakes and reservoirs upstream.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	5,070	3,330	17,100	9,990	7,750	6,940	33,900	25,900	18,200	10,800	2,730	4,080
2	5,190	3,160	18,000	9,500	7,240	6,890	32,400	25,200	16,800	9,690	3,030	5,930
3	5,050	3,240	22,300	9,450	6,760	6,650	35,500	23,700	14,600	8,760	3,610	8,910
4	5,260	3,390	20,600	10,100	6,260	6,470	47,700	20,500	13,100	7,150	4,440	5,530
5	4,730	4,640	16,400	10,900	6,280	6,260	47,700	18,300	11,600	6,510	3,480	3,880
6	3,780	5,620	13,100	11,200	6,440	6,250	43,200	16,600	10,300	6,080	2,450	2,750
7	3,990	6,590	11,600	10,700	6,210	5,900	40,800	15,200	10,200	5,580	2,150	2,540
8	3,320	6,430	11,200	10,100	6,310	6,630	37,800	15,300	9,460	7,640	2,160	2,240
9	3,070	5,680	10,900	9,270	6,130	6,460	35,300	15,700	9,460	11,300	2,150	2,000
10	3,560	5,430	11,700	8,900	7,600	6,720	32,900	15,200	8,950	12,800	2,870	2,160
11	2,990	3,530	13,400	8,880	9,300	7,370	29,600	13,900	10,300	12,400	1,780	2,160
12	2,940	4,180	15,700	8,220	10,300	7,170	26,600	12,500	12,500	10,700	1,350	1,950
13	2,890	4,030	15,700	8,570	9,890	6,820	23,200	11,200	12,800	9,120	1,390	1,610
14	3,450	3,840	14,100	10,000	8,940	6,830	20,100	10,000	12,400	7,060	1,520	1,550
15	3,500	3,640	e12,600	15,000	9,160	6,670	17,300	10,100	12,700	e6,200	2,660	1,860
16	4,530	3,280	e11,000	18,500	10,200	6,540	15,100	9,480	15,500	6,100	2,930	2,180
17	5,650	3,670	e9,600	17,900	12,700	6,720	13,300	9,670	16,700	5,670	2,750	2,510
18	6,610	3,820	8,830	13,600	13,800	6,700	12,300	9,910	17,600	5,290	2,140	2,610
19	5,970	3,340	8,380	12,100	13,000	6,640	11,900	9,010	19,400	4,800	1,580	2,180
20	5,030	3,350	8,140	11,300	11,700	6,780	11,200	6,980	19,200	5,250	1,630	2,360
21	4,400	3,540	6,850	11,300	10,400	7,380	11,300	5,700	16,800	5,340	1,930	2,420
22	4,000	3,580	6,780	10,700	9,460	7,550	14,400	7,990	13,900	4,820	2,250	2,120
23	3,710	3,700	6,900	11,300	9,180	8,020	15,400	9,660	11,700	4,020	2,050	2,160
24	3,670	4,140	10,300	11,600	8,300	8,560	17,500	11,400	9,140	3,620	1,890	1,620
25	3,310	4,530	18,300	11,200	8,350	8,450	26,900	17,800	8,420	3,710	1,840	1,430
26	2,960	6,100	20,500	9,820	7,530	8,450	32,200	24,700	7,170	2,750	1,690	1,430
27	2,850	10,600	15,700	9,130	7,250	8,600	31,800	27,700	6,690	2,980	1,570	1,870
28	2,960	9,500	11,200	9,560	6,830	10,300	30,800	26,300	6,640	2,970	1,590	2,170
29	3,060	10,300	11,200	8,690	---	20,800	29,500	23,500	5,900	3,260	1,510	3,220
30	2,850	15,700	10,700	7,380	---	32,100	28,100	21,000	9,210	3,020	1,980	2,820
31	3,080	---	10,200	7,770	---	34,600	---	19,700	---	2,560	2,930	---
Total	123,430	155,880	398,980	332,630	243,270	288,220	805,700	489,800	367,340	197,950	70,030	82,250
Mean	3,982	5,196	12,870	10,730	8,688	9,297	26,860	15,800	12,240	6,385	2,259	2,742
Max	6,610	15,700	22,300	18,500	13,800	34,600	47,700	27,700	19,400	12,800	4,440	8,910
Min	2,850	3,160	6,780	7,380	6,130	5,900	11,200	5,700	5,900	2,560	1,350	1,430
Cfsm	0.90	1.18	2.91	2.43	1.97	2.10	6.07	3.57	2.77	1.44	0.51	0.62
In.	1.04	1.31	3.36	2.80	2.05	2.43	6.78	4.12	3.09	1.67	0.59	0.69

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2005, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	4,151	6,573	7,746	7,106	7,397	12,830	19,470	11,650	6,467	3,418	2,841	3,003
Max	12,730	17,690	20,380	18,530	18,400	45,780	37,440	24,770	23,660	14,520	11,110	19,650
(WY)	(1978)	(1928)	(1997)	(1978)	(1970)	(1936)	(1987)	(1954)	(1984)	(1973)	(1990)	(1938)
Min	1,036	1,792	2,127	1,621	2,105	4,132	6,979	4,093	1,825	1,161	901	895
(WY)	(1965)	(2002)	(1930)	(1925)	(1931)	(1940)	(1995)	(1941)	(1964)	(1965)	(1965)	(1957)

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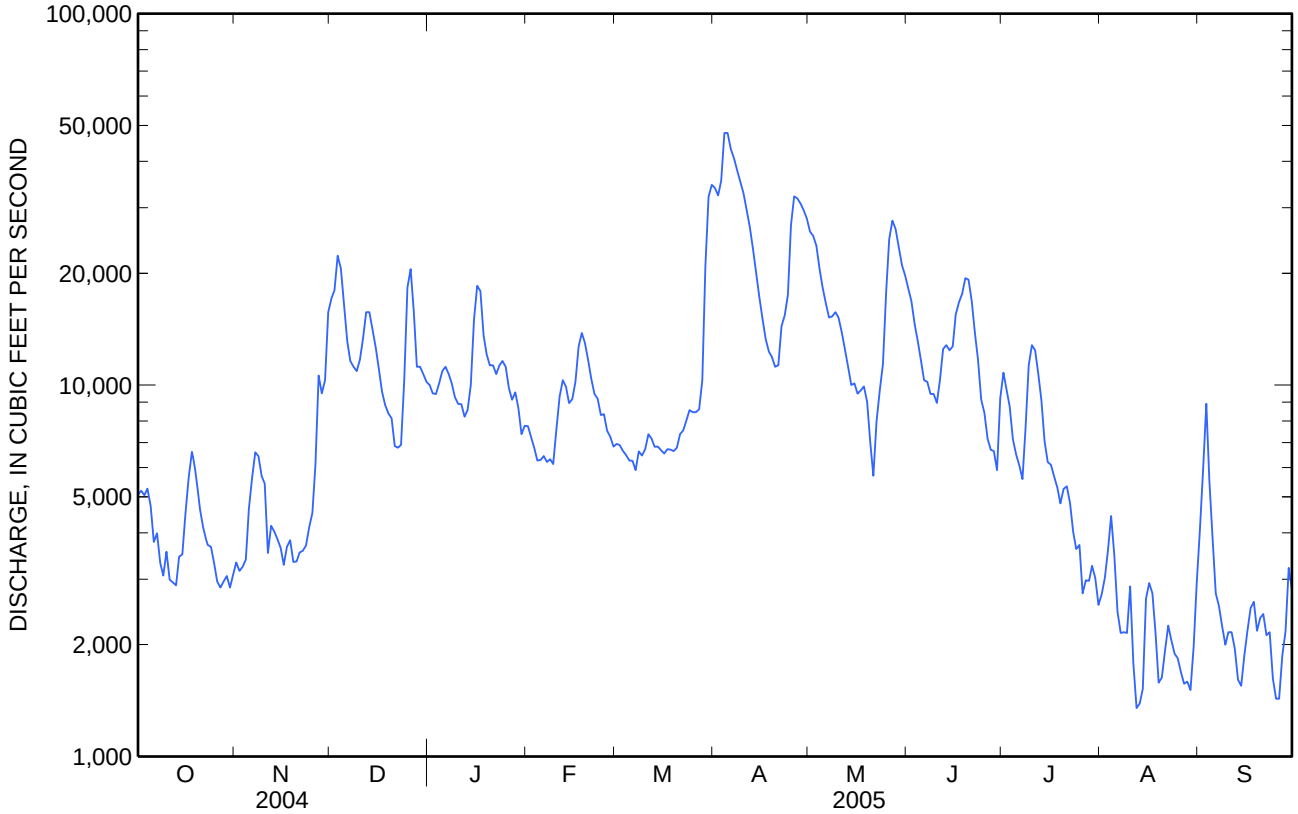
SUMMARY STATISTICS

	Calendar Year 2004		Water Year 2005		Water Years 1923 - 2005	
Annual total	2,904,350		3,555,480			
Annual mean	7,935		9,741		7,718	
Highest annual mean					12,490	1984
Lowest annual mean					3,068	1965
Highest daily mean	48,200	Apr 3	47,700	Apr 4	161,000	Mar 20, 1936
Lowest daily mean	1,800	Aug 8	1,350	Aug 12	199	Sep 23, 1923
Annual seven-day minimum	2,420	Jul 2	1,720	Aug 24	581	Sep 12, 1995
Maximum peak flow			50,600	Apr 4	173,000	Mar 20, 1936
Maximum peak stage			52.77	Apr 4	[a]68.40	Mar 20, 1936
Instantaneous low flow			1,150	Sep 25		
Annual runoff (cfsm)	1.79		2.20		1.74	
Annual runoff (inches)	24.42		29.89		23.70	
10 percent exceeds	16,100		19,500		17,200	
50 percent exceeds	5,410		7,600		5,230	
90 percent exceeds	3,120		2,250		1,640	

[a] From floodmarks.