



**The Appleton Wetland;  
Its Decline, Cause and Recommended Action**

**Appendix C: Selected Appleton Flow Records**

**Report prepared by**

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of the  
Mississippi Valley Field Naturalists**

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## Selected Appleton Flow Records

Detailed accurate measurements of river flow at Appleton have been recorded and maintained continuously since 1918. The Appleton Stream Gauge, now operated by the MVCA, is located just below the Mississippi Golf Club on the road into Appleton. All data is available publicly on the website operated by Environment Canada with the URL:

[http://www.wateroffice.ec.gc.ca/index\\_e.html](http://www.wateroffice.ec.gc.ca/index_e.html)

Real time data is available for the current calendar year (2014) and the prior year (2013), recorded at one hour intervals and available on the website within a few hours of the actual recording time. For the years prior to the two years of real time data, historic records based on the real time data of each year, with editing and recalibration, are available. Note that the early part of the Flour Mill Era is not in these records. However, there is a good record for 95 years of historical data recorded from 1918 to 2012.

This Appendix contains a selection of records from that website. There are three different sets of data;

1. Daily Discharge for Mississippi River at Appleton (02KF006) including both chart and tabular data,
2. Monthly Mean Discharge (m<sup>3</sup>/s) data in tabular form, and
3. Mean Daily Flow averaged over the 95 years of recorded Appleton data.

### Daily Discharge Records

The records include a sample of flow rates recorded during the Flour Mill Era that includes graphical flow charts at ten year intervals over the period 1920 to 1990. The historical record indicates that limited power production started in 1990 using the original Flour Mill turbines, so strictly speaking, 1990 belongs with the Generator Station Era. For the convenience of sampling at uniform ten year periods, 1990 has been included here with the Flour Mill Era data. It does not bias the results.

Also included with the above graphical charts is a numerical tabulation of daily flow rates for each sample chart. These tabulations provide a more accurate indication of flow rates, particularly during the summer low-flow period. The typical annual cycle in the charts shows the spring flood in April, a rapid decline in flow through May, a continuing decline through June, and an almost flat period of low-flow through July, August, September and October, followed by an increase in flow during the winter months.

The charts show considerable variation year-to-year, the result of the normal variations in weather and precipitation through each year. The charts also include “Max” and “Min” curves that plot the daily maximum and minimum levels throughout the 95 years of recorded data, and represent the outer bounds of natural variability. The most consistent portion of the yearly cycle is the low and almost flat flow through the July to October period that should provide the low water levels required by the wetland trees for healthy growth.

A second set of similar charts for the period 2000 through 2012 is provided as a sample of flow conditions during the Generator Station Era. These charts show the year-to-year variations that occurred in the previous set, but taken as a whole, the flow pattern in both eras appear very similar.

## Monthly Mean Discharge Records

As a further test, the records of monthly average flows for every year from 1918 to 2012 were downloaded from the Environment Canada website, and are included at the end of this Appendix. The Mean, Maximum and Minimum monthly flow rates were calculated for the three periods:

1920 to 1990 - Flour Mill Era  
2000 to 2012 - Generator Station Era  
1919 to 2012 - Full data record

The data for 1918 is incomplete, and the data for 1919 appears noisy on the chart for that year, so these two years were not included in the sample for the Flour Mill Era. Also, for consistency with the Daily Discharge Records above, the 1920 to 1990 period has been used for the Flour Mill Era. Since there is some doubt as to exactly when operations evolved from traditional Flour Mill to current Generator Station, the second sampling period has not included the transition years from 1991 to 1999.

The results were then plotted on bar charts, and those are included at the end of the Appendix. It can be seen that the mean monthly flow for all three periods is very similar. The significant difference is higher winter flows and lower spring floods in the Generator Station Era. These changes during the trees dormant period should have little effect. During the summer growing period there is a slightly higher flow in the Generator Station Era, but the difference is not likely to cause sufficient water level change to affect the wetland trees.

## Mean Daily Flow Records

A useful piece of flow information is the mean daily flow averaged over the full 95 years of the Appleton Stream Gauge records. This is very easy to get in graphical form as an option on the Daily Discharge plots from the Environment Canada website, but not so readily available as a digital record. Since there was a need for the digital mean daily flow for the work in Appendix P, the quick answer was to do some manual scaling of the graphical data to construct the essential details of a digital record. The details are at the end of this Appendix.

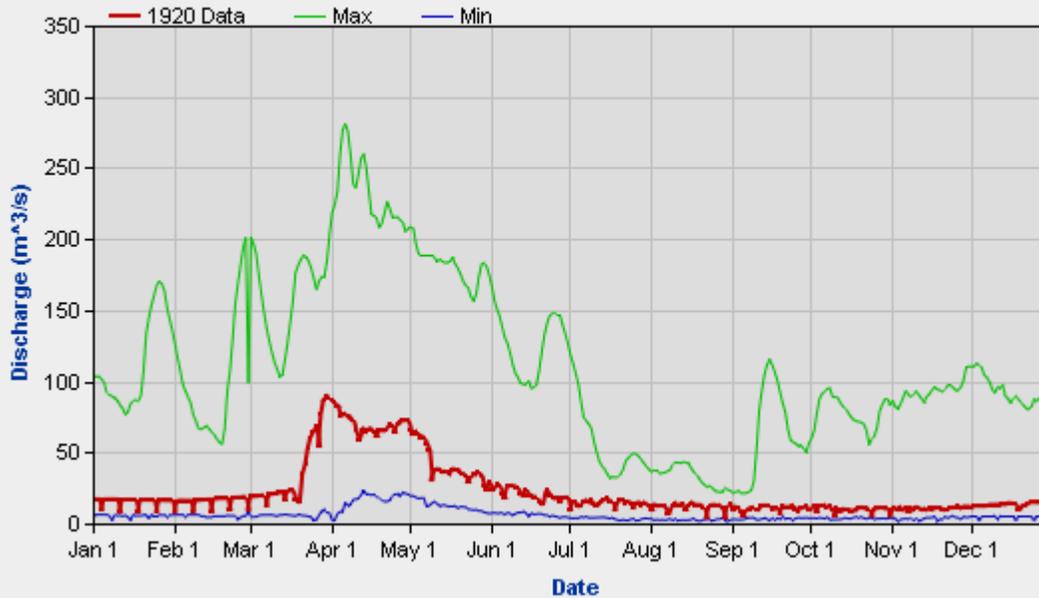
## Disclaimer

We include below an excerpt from the Environment Canada website as applied to the use of the extracted data.

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### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

1920 Daily Discharge (m<sup>3</sup>/s)

1920	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	17.0B	7.93B	19.0B	86.9	65.7	24.4	9.34	10.2	10.2	10.3	9.34	11.1
2	17.0B	16.1B	19.1B	85.2	63.7	24.4	15.0	13.3	11.6	12.8	10.6	12.1
3	17.0B	16.1B	19.3B	83.3	64.8	27.5	15.0	12.5	11.0	8.86	9.83	12.5
4	9.34B	16.1B	19.5B	75.9	62.9	26.5	12.2	12.5	8.21	12.5	11.3	12.3
5	17.0B	16.0B	19.8B	76.7	60.9	21.5	12.5	12.5	6.23	12.5	9.83	12.3
6	17.0B	16.0B	20.1B	76.7	60.6	18.3	15.9	12.2	9.06	12.8	10.8	12.3
7	17.0B	16.1B	12.5B	75.0	56.6	26.2	16.1	7.65	10.5	11.6	8.86	12.6
8	17.0B	7.93B	20.4B	74.8	52.1	26.5	15.0	7.36	10.2	12.0	10.8	13.1
9	17.0B	16.3B	20.7B	73.1	31.4	26.5	16.4	12.7	11.6	10.3	10.3	13.1
10	17.0B	16.4B	21.1B	65.4	36.8	25.9	14.2	14.2	9.63	5.30	11.3	13.2
11	8.78B	16.6B	21.4B	59.5	38.2	24.9	12.2	13.0	9.63	10.8	10.6	13.3
12	16.8B	16.7B	21.8B	59.7	37.9	20.7	14.4	13.3	12.7	8.16	9.83	13.3
13	16.8B	16.8B	22.1B	66.5	36.5	20.0	15.6	13.6	12.7	10.3	10.3	13.5
14	16.8B	17.0B	16.7B	64.8	36.5	24.4	16.8	10.2	12.7	9.83	9.60	13.5
15	16.8B	8.78B	22.7B	66.5	36.2	20.0	17.7	13.3	12.7	9.83	10.6	14.3
16	16.8B	17.4B	23.2B	66.3	34.5	19.1	16.1	14.7	9.91	9.09	9.83	14.3
17	16.7B	17.6B	23.2	64.6	38.5	18.8	15.6	13.9	10.8	9.09	10.6	14.0
18	8.21B	17.7B	16.7	62.3	37.9	18.8	10.2	13.0	10.8	9.34	11.1	13.8
19	16.7B	17.8B	15.6	65.4	37.4	15.9	14.4	13.0	6.80	10.8	10.8	10.3
20	16.7B	17.8B	15.6	65.4	37.1	14.2	16.8	12.7	12.2	11.3	10.3	11.6
21	16.6B	18.0B	35.7	65.4	34.8	14.4	16.4	11.9	11.6	10.8	9.60	12.7
22	16.6B	9.63B	41.9	66.5	33.7	24.1	14.7	4.53	11.6	10.6	10.0	12.6
23	16.6B	18.1B	53.5	69.7	29.7	20.0	15.3	11.9	11.9	10.1	11.1	14.6
24	16.6B	18.3B	60.9	68.8	32.6	19.1	14.7	13.0	13.0	6.00	11.1	15.0B
25	8.21B	18.3B	64.3	64.3	34.5	17.7	11.0	13.0	9.91	9.83	11.6	15.0B
26	16.4B	18.4B	68.0	70.5	34.5	17.7	14.4	12.7	9.06	10.8	12.3	14.9B
27	16.4B	18.7B	54.7	70.8	36.2	15.0	14.7	12.5	10.8	11.1	10.8	14.9B
28	16.4B	18.8B	77.3	72.5	33.7	18.0	13.0	10.8	11.3	11.1	11.8	14.9B
29	16.3B	10.2B	87.5	72.5	26.5	18.3	14.7	4.81	12.2	10.6	11.8	14.7B
30	16.3B	89.8	72.5	24.1	18.3	13.6	11.9	10.2	10.6	11.8	14.7B	
31	16.3B	88.9		29.2		12.5	13.9		5.04		14.7B	
Mean	15.7	15.8	35.9	70.3	41.2	20.9	14.4	11.8	10.7	10.1	10.6	13.4
Max	17.0	18.8	89.8	86.9	65.7	27.5	17.7	14.7	13.0	12.8	12.3	15.0
Min	8.21	7.93	12.5	59.5	24.1	14.2	9.34	4.53	6.23	5.04	8.86	10.3

Overall Mean      Maximum Daily      Minimum Daily  
22.5                      89.8 on Mar 30                      4.530 on Aug 22

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

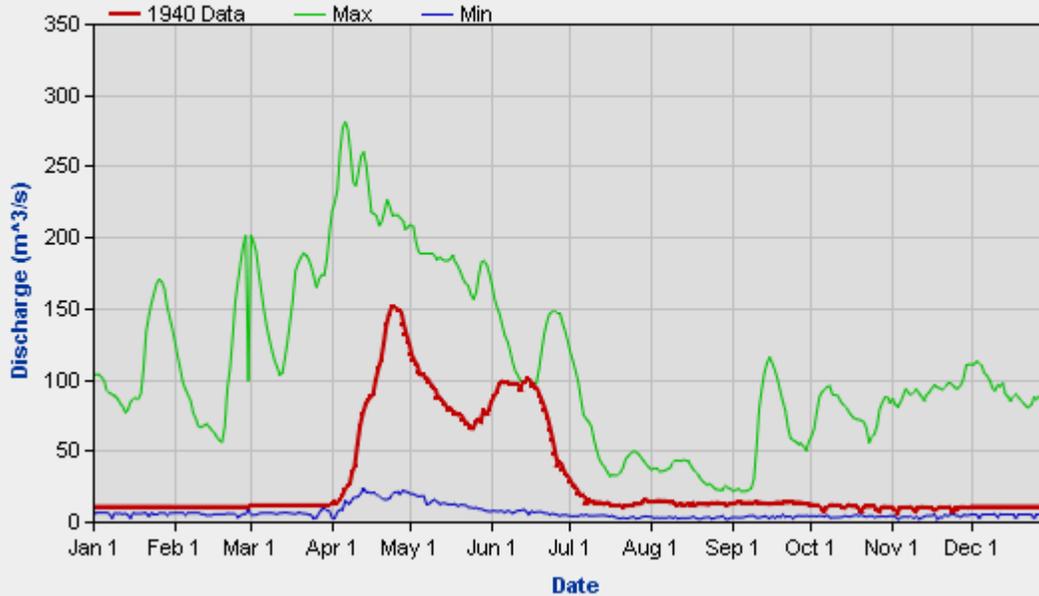
1930 Daily Discharge (m<sup>3</sup>/s)

1930	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	15.0B	22.7B	49.8	30.6	44.2	41.9	24.6	7.79	8.27	11.6	10.6	5.61B
2	15.0B	22.7B	48.1	31.7	43.3	42.2	22.5	8.47	8.81	11.8	10.1	5.61B
3	15.0B	22.7B	45.9	36.0	42.2	42.8	15.4	9.15	9.51	12.0	10.8	5.61B
4	15.0B	22.7B	40.5	38.2	42.2	39.9	15.9	8.27	8.47	12.7	9.68	5.61B
5	15.0B	22.7B	40.5	43.3	41.1	37.4	19.0	7.48	7.79	12.0	7.93	5.61B
6	15.0B	22.7B	40.5	47.3	42.8	34.0	16.8	7.33	7.16	10.6	8.10	5.61B
7	15.0B	22.7B	40.5	54.4	44.5	31.1	15.7	7.16	6.43	11.2	8.27	5.61B
8	15.0B	22.7B	38.5	56.6	44.2	28.3	17.4	6.74	6.17	10.8	8.81	5.61B
9	15.0B	22.7B	36.8	60.9	44.7	26.5	19.0	6.29	6.74	9.88	7.93	5.61B
10	15.0B	22.7B	36.8	66.0	45.6	27.2	16.8	5.64	7.16	9.68	7.93	5.61B
11	15.0B	22.7B	39.1	70.2	45.6	29.4	15.0	6.03	7.79	9.15	7.93	5.61B
12	15.0B	22.7B	39.6	73.3	44.5	23.4	15.9	5.89	7.16	8.27	8.98	5.61B
13	15.0B	22.7B	40.5	75.3	45.6	11.0	16.8	6.29	6.88	9.68	8.81	5.61B
14	15.0B	22.7B	40.5	73.9	46.4	14.0	15.9	4.98	6.57	10.1	8.81	5.61B
15	15.0B	22.7B	40.5	73.9	47.6	26.5	15.0	5.49	7.16	9.88	7.62	5.61B
16	15.0B	22.7B	40.5	73.3	50.4	20.4	19.3	6.03	7.48	10.6	7.48	5.61B
17	15.0B	22.7B	40.5	72.5	50.4	18.0	21.0	5.64	7.48	10.8	7.48	5.61B
18	15.0B	22.7B	41.1	70.2	48.7	22.8	16.8	6.29	7.16	10.6	6.43	5.61B
19	15.0B	22.7B	39.6	68.0	45.6	26.5	15.0	7.62	6.74	7.93	7.62	5.61B
20	15.0B	22.7B	33.1	66.3	45.6	28.3	14.4	9.88	7.48	9.15	7.33	5.61B
21	15.0B	22.7B	32.6	66.8	46.4	26.8	14.7	8.10	7.62	9.68	7.62	5.61B
22	15.0B	22.7B	31.4	63.7	48.4	24.6	17.4	6.88	7.79	10.1	7.93	5.61B
23	15.0B	22.7B	29.7	60.9	44.7	23.6	16.4	7.33	7.79	9.68	7.48	5.61B
24	15.0B	22.7B	29.7	57.5	42.8	25.9	15.0	9.34	7.16	8.81	7.62	5.61B
25	15.0B	22.7B	29.2	55.5	42.8	25.9	11.0	7.48	7.48	7.62	7.16	5.61B
26	15.0B	22.7B	28.0	53.5	44.2	31.1	10.1	8.47	8.27	7.62	6.17	5.61B
27	15.0B	22.7B	28.0	51.5	43.6	30.6	8.81	8.81	9.51	8.98	6.43	5.61B
28	15.0B	22.7B	28.3	48.7	45.6	26.2	8.27	8.27	10.3	9.15	6.57	5.61B
29	15.0B	28.3	46.4	43.6	24.6	9.34	7.79	11.0	8.98	6.74	5.61B	
30	15.0B	29.4	44.2	43.6	22.8	9.15	7.62	11.0	9.34	6.57	5.61B	
31	15.0B	29.7		42.8		7.93	9.15		10.8		5.61B	
Mean	15.0	22.7	36.7	57.7	45.0	27.8	15.4	7.35	7.88	9.97	7.96	5.61
Max	15.0	22.7	49.8	75.3	50.4	42.8	24.6	9.88	11.0	12.7	10.8	5.61
Min	15.0	22.7	28.0	30.6	41.1	11.0	7.93	4.98	6.17	7.62	6.17	5.61

Overall Mean      Maximum Daily      Minimum Daily  
21.5                      75.3 on Apr 13                      4.980 on Aug 14

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

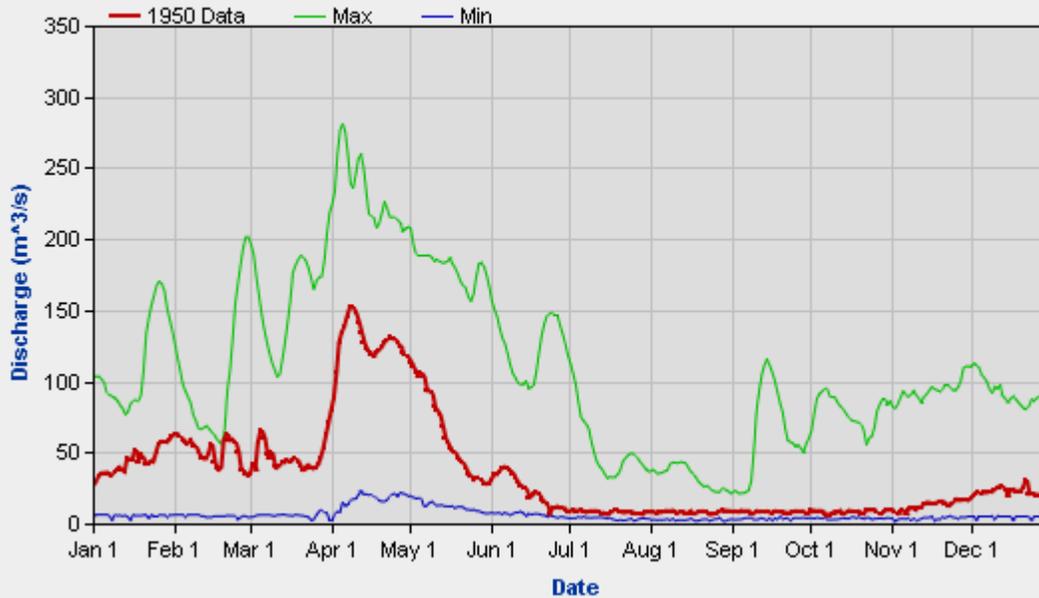
1940 Daily Discharge (m<sup>3</sup>/s)

1940	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	10.3B	10.2B	11.4B	13.3	118	84.1	27.9	14.0	12.7	11.8	9.68	10.4B
2	10.3B	10.2B	11.4B	14.0	114	88.1	25.9	14.0	13.1	11.4	8.10	10.4B
3	10.3B	10.2B	11.4B	12.5	111	91.2	24.1	14.4	13.5	11.4	6.29	10.4B
4	10.3B	10.2B	11.4B	16.1	105	96.3	19.4	14.4	13.5	11.4	9.68	10.4B
5	10.3B	10.2B	11.4B	17.7	103	98.5	18.7	14.3	13.1	7.79	9.88	10.4B
6	10.3B	10.2B	11.4B	22.1	103	97.7	18.7	14.3	12.9	6.74	9.88	10.4B
7	10.3B	10.2B	11.4B	25.6	101	98.0	13.3	14.0	13.1	9.88	9.88	10.4B
8	10.3B	10.2B	11.4B	26.6	98.0	96.8	15.4	13.5	12.9	11.8	9.88	10.4B
9	10.3B	10.2B	11.4B	35.1	95.4	96.8	14.0	13.5	13.1	11.6	8.64	10.4B
10	10.3B	10.2B	11.4B	39.9	94.0	96.8	14.0	12.5	13.5	11.2	7.02	10.4B
11	10.3B	10.2B	11.4B	54.4	87.2	96.3	13.3	11.8	13.3	11.4	9.68	10.4B
12	10.3B	10.2B	11.4B	67.7	87.2	92.3	13.3	12.0	12.9	11.2	10.1	10.4B
13	10.3B	10.2B	11.4B	75.9	85.5	98.5	12.9	11.8	12.7	9.88	9.88	10.4B
14	10.3B	10.2B	11.4B	82.1	82.1	98.5	12.3	11.8	12.5	9.88	9.88	10.4B
15	10.3B	10.2B	11.4B	85.8	79.0	101	13.1	12.0	12.3	11.4	9.68	10.4B
16	10.3B	10.2B	11.4B	87.8	79.6	95.7	12.0	11.8	12.5	11.0	9.34	10.4B
17	10.3B	10.2B	11.4B	90.3	78.7	96.3	11.4	12.9	12.9	10.8	7.79	10.4B
18	10.3B	10.2B	11.4B	100	75.9	93.4	11.2	11.6	13.3	10.8	8.98	10.4B
19	10.3B	10.2B	11.4B	108	75.0	88.9	11.2	12.5	13.1	9.51	9.88	10.4B
20	10.3B	10.2B	11.4B	114	75.3	84.4	11.2	12.3	13.1	7.16	9.88	10.4B
21	10.3B	10.2B	11.4B	125	71.9	79.0	10.1	12.3	13.5	10.4	9.88	10.4B
22	10.3B	10.2B	11.4B	138	69.1	72.8	10.8	12.0	13.5	10.6	9.88	10.4B
23	10.3B	10.2B	11.4B	146	69.1	65.1	11.2	12.0	13.8	10.6	10.3	10.4B
24	10.3B	10.2B	11.4B	151	65.4	56.9	11.4	12.9	13.5	10.8	7.02	10.4B
25	10.3B	10.2B	11.4B	151	65.4	47.0	11.4	12.7	13.3	10.6	9.88	10.4B
26	10.3B	10.2B	11.4B	149	69.7	39.6	12.3	13.1	13.3	8.47	8.98	10.4B
27	10.3B	10.2B	11.4B	148	71.4	42.2	12.3	12.7	13.1	7.16	10.1	10.4B
28	10.3B	10.2B	11.4B	139	69.9	37.1	12.9	12.5	12.7	10.3	10.1	10.4B
29	10.3B	10.2B	11.4B	132	78.2	33.1	13.8	12.3	12.3	10.3	9.88	10.4B
30	10.3B		11.4B	126	75.9	32.0	15.1	11.8	12.3	10.1	9.68	10.4B
31	10.3B		11.4B		78.2		14.0	12.3		10.1		10.4B
Mean	10.3	10.2	11.4	83.1	84.9	79.8	14.5	12.8	13.0	10.2	9.32	10.4
Max	10.3	10.2	11.4	151	118	101	27.9	14.4	13.8	11.8	10.3	10.4
Min	10.3	10.2	11.4	12.5	65.4	32.0	10.1	11.6	12.3	6.74	6.29	10.4

Overall Mean      Maximum Daily      Minimum Daily  
29.1                      151 on Apr 24                      6.290 on Nov 3

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

1950 Daily Discharge (m<sup>3</sup>/s)

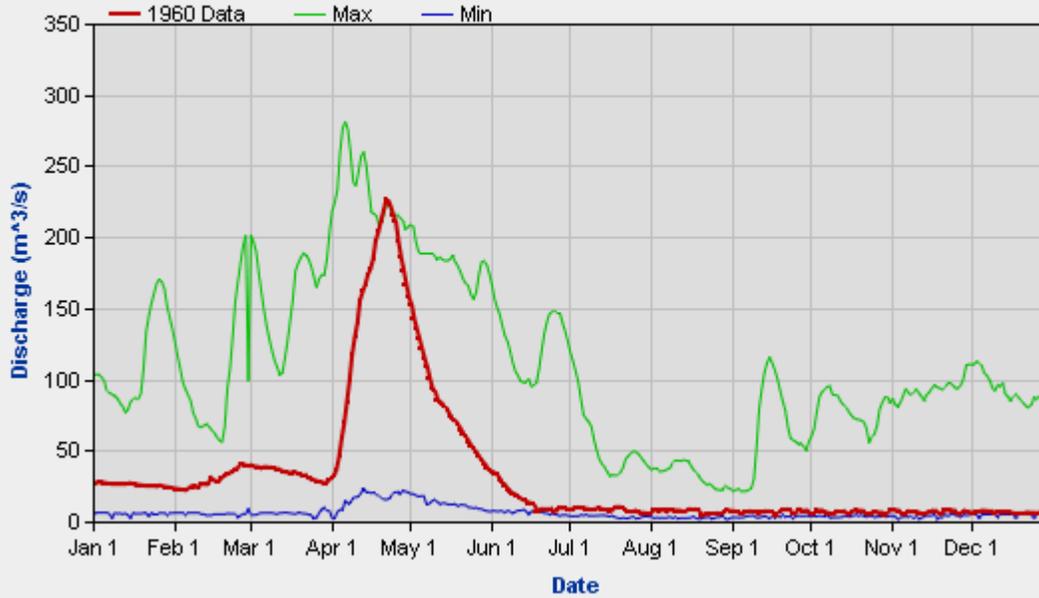
1950	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	26.6	62.6	34.3	71.4	117	28.6	8.64	8.10	8.64	6.88	9.51	16.4
2	29.2	62.6	35.1	80.4	114	30.9	8.81	8.10	8.27	9.15	9.34	17.7
3	33.4	62.3	41.9	88.9	110	34.5	9.15	7.79	8.47	8.98	8.64	20.2
4	35.1	58.3	37.9	106	107	34.5	8.98	7.48	8.10	8.64	6.74	21.5
5	35.4	57.8	57.5	128	104	37.1	8.98	7.79	8.98	8.81	7.93	22.4
6	35.7	56.6	65.7	135	107	39.1	9.34	8.10	8.64	8.64	9.51	20.5
7	34.5	58.3	60.6	139	103	39.6	8.64	8.64	8.64	7.62	7.62	22.4
8	34.0	54.9	49.6	146	93.2	38.8	7.79	8.64	8.64	6.29	9.51	21.8
9	36.5	54.1	46.7	152	93.2	37.7	8.47	8.64	7.62	6.29	11.0	22.4
10	38.2	49.8	49.8	152	92.3	35.4	8.64	8.98	7.02	7.62	10.8	22.4
11	39.9	46.7	40.2	148	82.7	31.7	8.64	7.79	8.47	7.48	9.68	23.8
12	37.9	45.6	39.1	142	79.9	28.9	8.64	7.48	8.27	7.93	11.2	25.3
13	36.2	45.6	41.1	135	76.7	26.6	8.10	8.10	8.47	8.98	11.8	25.6
14	45.9	49.0	42.8	128	69.1	25.6	7.19	7.79	8.27	7.48	13.5	26.2
15	45.0	55.5	43.0	123	60.9	24.7	7.19	7.48	8.47	7.33	14.7	23.5
16	45.0	43.9	44.2	122	57.2	18.9	6.43	7.33	7.79	8.81	14.5	19.7
17	52.1	39.1	43.6	119	53.2	19.7	7.33	8.64	7.19	8.64	14.0	23.2
18	43.0	37.9	44.2	117	52.1	20.5	7.79	7.19	8.47	8.47	14.2	23.8
19	48.7	39.1	46.7	120	49.8	21.8	9.68	7.33	8.47	8.27	14.7	22.9
20	45.9	59.5	43.9	122	46.2	21.0	9.15	8.27	8.27	8.47	15.4	22.7
21	41.9	62.9	40.2	124	44.2	17.2	8.27	8.47	8.27	7.62	15.4	22.9
22	42.2	58.3	38.2	127	42.8	15.0	7.79	8.47	7.62	6.57	14.5	25.6
23	43.9	58.9	39.9	129	38.8	13.8	7.79	8.10	7.33	9.15	13.1	30.3
24	42.8	57.5	40.8	131	35.1	7.48	8.10	6.43	7.62	9.51	13.1	20.7
25	49.8	51.0	39.6	130	33.1	10.1	7.79	6.43	8.27	9.51	14.7	21.0
26	56.1	37.9	38.8	130	31.4	11.2	7.62	6.88	8.64	9.51	16.4	20.7
27	57.5	37.9	39.9	127	32.0	11.8	7.02	7.62	8.47	8.98	16.4	20.2
28	57.5	34.5	41.9	125	32.6	11.0	7.02	8.64	8.47	6.74	16.4	20.0
29	57.2		46.7	120	30.3	11.0	6.57	9.15	8.27	7.19	16.7	20.2
30	58.3		53.8	119	28.6	10.4	6.57	8.98	7.19	8.81	16.7	19.7
31	61.7		62.6		27.9		8.10	8.81		9.51		20.5
Mean	43.5	51.4	44.8	125	66.0	23.8	8.07	7.99	8.18	8.19	12.6	22.1
Max	61.7	62.9	65.7	152	117	39.6	9.68	9.15	8.98	9.51	16.7	30.3
Min	26.6	34.5	34.3	71.4	27.9	7.48	6.43	6.43	7.02	6.29	6.74	16.4

Overall Mean      Maximum Daily  
34.9                      152 on Apr 9

Minimum Daily  
6.290 on Oct 8

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



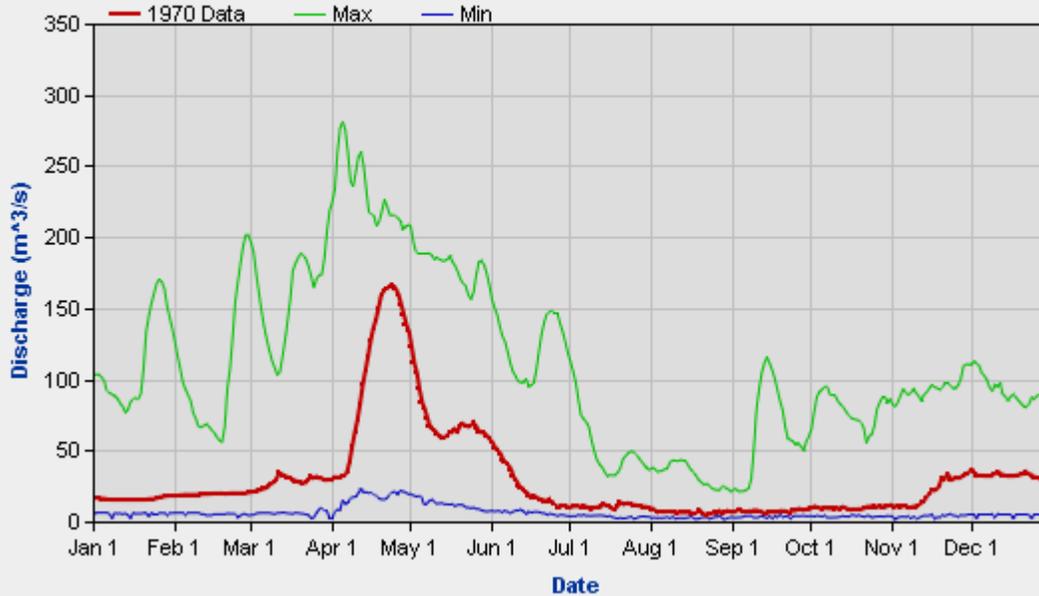
MISSISSIPPI RIVER AT APPLETON (02KF006)  
1960 Daily Discharge (m<sup>3</sup>/s)

1960	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	27.5B	23.1B	39.6B	31.1	153	35.1	8.35	6.23	7.31	5.24	8.16	6.23
2	27.2B	22.9B	38.8B	32.6	143	34.3	9.00	8.16	7.08	5.38	7.93	6.23B
3	27.5B	22.6B	38.5B	36.8	136	33.1	9.66	7.93	6.57	7.93	7.70	6.74
4	27.5B	22.4B	38.2B	46.2	129	29.7	9.88	7.70	5.72	7.70	7.31	7.08
5	27.2B	22.1B	37.4B	58.9	122	28.3	9.66	7.93	5.55	7.70	4.96	7.50
6	26.9B	23.1B	38.2B	69.7	115	25.5	9.20	7.93	6.74	6.57	5.10	7.50
7	26.6B	24.5B	38.2B	84.4	109	23.1	9.00	6.91	7.08	6.23	6.91	7.31
8	26.3B	24.5B	37.9B	99.7	101	21.4	8.55	8.16	7.08	5.38	6.91	7.08
9	26.3B	24.7B	37.9B	118	94.0	19.9	8.35	7.93	6.91	5.24	6.74	7.08
10	26.3B	24.2B	37.4B	130	92.0	18.9	8.55	7.70	6.57	5.55	6.57	6.23
11	26.3B	26.3B	36.8B	140	85.8	17.6	9.00	7.70	5.38	7.08	6.23	6.40
12	26.3B	26.3B	36.5B	156	84.4	16.2	9.20	7.50	6.57	6.91	5.38	6.40
13	26.3B	26.1B	35.4B	162	83.0	15.2	8.78	7.08	7.08	6.74	5.38	6.40
14	26.6B	27.2B	34.8B	167	81.8	14.8	8.35	7.31	7.08	6.57	6.23	6.57
15	26.9B	30.6B	34.5B	174	77.9	13.3	7.93	8.35	7.08	4.96	6.74	6.57
16	26.3B	28.9B	34.3B	178	74.5	12.9	7.31	8.50	6.91	5.72	7.50	6.40
17	26.1B	28.3B	34.3B	185	73.1	12.2	7.93	8.35	4.67	7.70	7.31	5.89
18	25.8B	28.6B	34.5B	198	70.8	7.31	9.66	8.35	5.24	7.93	6.91	5.55
19	25.5B	30.6B	33.7B	204	68.0	7.50	10.1	7.93	7.70	7.70	5.24	5.72
20	25.3B	32.6B	33.1B	212	65.1	8.55	10.1	4.81	8.35	7.50	5.72	5.72
21	25.0B	33.4B	32.3B	219	61.4	8.55	9.66	4.53	8.35	7.31	7.93	5.72
22	25.0B	34.3B	32.6B	227	59.7	8.55	8.16	5.24	8.35	4.96	7.93	6.23
23	25.0B	35.1B	30.3B	222	56.4	8.55	7.08	5.24	7.93	5.10	7.93	6.23
24	25.0B	36.8B	30.3B	216	53.0	8.78	6.91	5.55	5.72	6.06	7.70	6.06
25	24.7B	37.1B	29.2B	211	51.3	7.08	7.08	5.55	6.23	6.57	7.50	6.06
26	25.3B	40.2B	28.6B	197	48.7	7.93	7.50	5.72	7.93	6.40	5.38	5.89
27	25.0B	40.2B	28.0E	186	45.6	9.66	6.40	5.38	7.93	6.23	5.72	5.89
28	24.5B	39.6B	27.5	177	43.3	9.43	6.06	5.89	7.36	6.06	7.31	6.85B
29	24.2B	39.1B	27.2	167	41.1	9.43	5.89	7.70	7.70	4.81	7.08	6.85B
30	23.9B	27.2	27.2	158	37.4	8.55	5.72	8.16	7.31	5.38	6.74	6.85B
31	23.6B		29.2		36.2		5.55	7.50		7.93		6.85B
Mean	25.9	29.5	33.9	149	80.4	16.0	8.21	7.06	6.92	6.40	6.74	6.45
Max	27.5	40.2	39.6	227	153	35.1	10.1	8.50	8.35	7.93	8.16	7.50
Min	23.6	22.1	27.2	31.1	36.2	7.08	5.55	4.53	4.67	4.81	4.96	5.55

Overall Mean      Maximum Daily      Minimum Daily  
31.2                      227 on Apr 22                      4.530 on Aug 21

B - Ice Conditions      E - Estimated

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

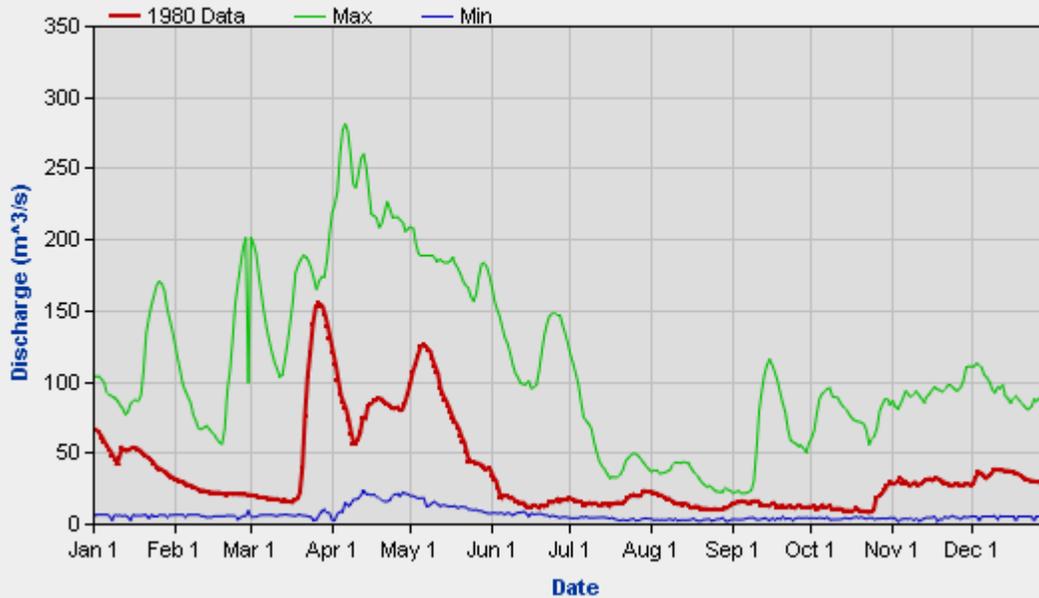
1970 Daily Discharge (m<sup>3</sup>/s)

1970	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	16.8B	18.1B	20.4B	29.4	134	58.3	10.4	9.66	6.77	8.55	11.5	34.3
2	16.6B	18.2B	20.7B	29.2	123	55.8	9.91	8.95	6.71	9.40	11.0	36.8
3	16.3B	18.4B	21.0B	31.4	112	51.3	10.6	8.27	7.08	10.4	10.5	35.7
4	16.0B	18.5B	21.5B	30.9	105	51.0	10.9	6.71	8.16	10.0	11.0	32.0
5	15.9B	18.7B	21.9B	31.1	93.2	47.9	10.7	7.02	7.90	9.43	10.3	32.3B
6	15.6B	18.6B	22.5B	32.0	84.4	43.3	10.3	6.85	6.94	9.09	10.8	32.3B
7	15.4B	18.6B	23.2B	32.8	79.6	42.2	10.6	6.85	6.74	9.43	11.1	32.0B
8	15.3B	18.6B	23.8B	35.1	73.3	40.5	10.4	7.02	7.14	9.40	9.91	32.0B
9	15.3B	18.7B	25.2B	42.5	66.8	36.8	9.34	6.99	7.16	9.17	9.91	32.0B
10	15.3B	18.8B	26.9B	53.2	66.5	31.7	9.00	6.71	7.70	9.71	10.4	32.3B
11	15.3B	19.1B	27.9	62.9	64.3	29.2	9.68	6.54	7.70	8.75	10.3	33.7B
12	15.3B	19.3B	30.0	71.9	61.4	25.8	10.0	6.29	7.25	9.29	11.5	34.5B
13	15.3B	19.3B	34.8	83.0	59.7	23.8	10.4	6.46	6.77	8.95	13.4	34.0B
14	15.3B	19.4B	32.8	96.0	59.2	23.0	10.8	6.43	5.89	10.1	14.6	32.8B
15	15.3B	19.5B	32.0	106	58.9	21.1	12.0	6.40	5.66	9.49	17.1	32.3B
16	15.3B	19.7B	31.1	116	60.9	17.8	11.2	6.46	6.51	8.67	20.0	32.0B
17	15.3B	19.7B	30.6	127	62.9	17.4	10.6	6.20	6.71	8.18	21.8	32.0B
18	15.3B	19.7B	29.4	136	63.1	17.9	9.15	5.58	6.51	8.52	22.0	32.0B
19	15.3B	19.7B	28.6	142	64.8	17.1	8.47	5.92	6.68	8.47	22.9	32.3B
20	15.3B	19.5B	27.8	150	63.4	15.9	10.6	7.93	7.22	8.67	25.3	32.6B
21	15.4B	19.5B	27.7	159	67.1	15.3	13.4	6.80	7.22	8.55	30.6	33.1B
22	15.7B	19.7B	27.1	163	68.5	14.7	12.3	4.98	7.14	9.26	29.7	34.3B
23	15.7B	19.8B	27.5	164	67.4	14.4	12.5	4.64	6.60	10.2	33.7	34.8B
24	15.9B	19.8B	29.2	165	66.8	15.9	12.7	5.24	6.14	10.4	29.2	33.4B
25	16.3B	19.8B	31.7	167	67.7	13.5	12.1	5.80	7.82	10.5	29.7	32.6B
26	17.0B	19.8B	30.6	164	69.4	12.9	11.6	6.46	7.90	10.7	30.6	31.4B
27	17.3B	19.8B	31.4	160	66.3	10.0	11.4	6.09	8.83	10.3	30.6	30.9B
28	17.7B	19.8B	30.6	153	63.1	10.2	11.0	7.28	8.52	10.6	31.1	30.6B
29	18.0B		30.3	146	62.6	11.3	10.6	6.06	8.04	10.4	32.3	30.0B
30	18.1B		29.4	139	62.9	11.0	10.3	6.60	8.55	10.4	33.4	29.4B
31	18.1B		29.2		59.7		10.1	7.42		10.8		28.9B
Mean	16.0	19.2	27.6	101	73.5	26.6	10.7	6.66	7.20	9.54	19.9	32.6
Max	18.1	19.8	34.8	167	134	58.3	13.4	9.66	8.83	10.8	33.7	36.8
Min	15.3	18.1	20.4	29.2	58.9	10.0	8.47	4.64	5.66	8.18	9.91	28.9

Overall Mean      Maximum Daily      Minimum Daily  
29.2                      167 on Apr 25                      4.640 on Aug 23

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

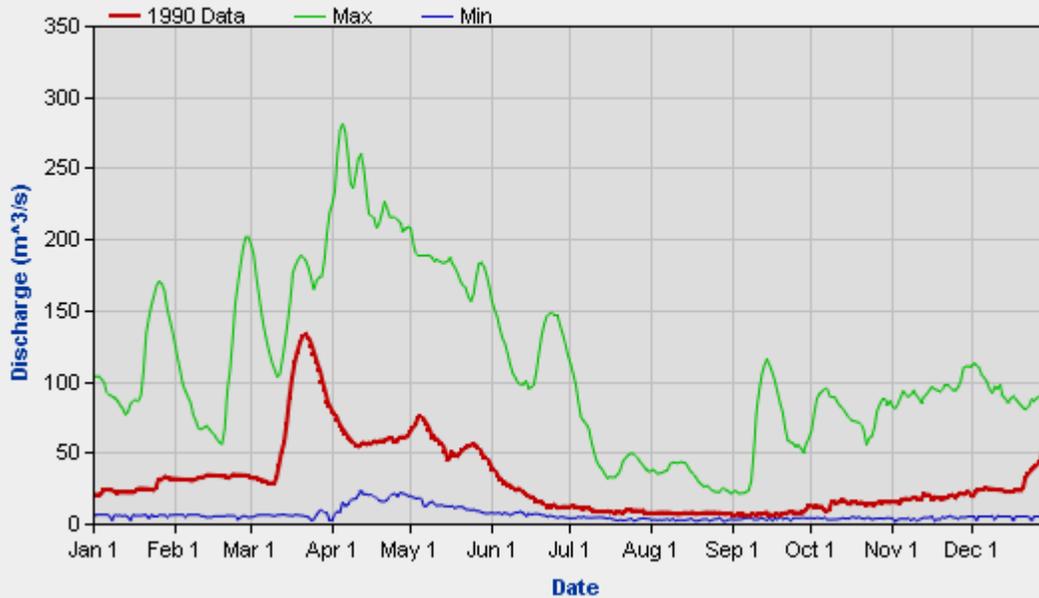
1980 Daily Discharge (m<sup>3</sup>/s)

1980	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	67.3	31.4B	19.9B	121	97.6	34.0	17.6	21.9	13.9	11.6	28.3	27.1
2	65.4	30.6B	19.6B	112	106	31.4	16.5	21.5	14.6	12.1	27.7	28.1
3	63.9B	29.7B	19.1B	101	112	25.5	16.1	20.7	14.9	10.5	30.0	32.8B
4	60.6B	28.9B	18.5	90.5	118	18.9	15.5	20.0	15.5	10.6	32.9	36.0B
5	57.1B	28.3B	18.2	85.7	124	17.9	15.3	19.4	15.5	12.4	28.5	35.0B
6	54.1B	27.1	18.2	80.7	126	19.6	12.7	18.3	15.0	11.7	29.1	33.5B
7	51.7	26.5	17.7	72.9	124	19.3	13.6	17.4	14.7	11.5	27.5	32.2B
8	48.3B	25.8	17.4	63.4	122	17.8	14.3	16.9	14.4	12.4	27.0	33.8B
9	45.1B	24.8	17.3	56.7	116	17.6	13.5	15.1	15.6	9.91	28.5	35.6B
10	42.4B	23.8	17.0	56.4	111	16.0	14.1	14.5	15.5	10.1	28.4	38.0B
11	46.4	23.1	17.1	59.2	106	14.9	13.8	13.7	15.7	10.3	27.1	37.8B
12	52.8B	23.0	16.3B	63.8	95.4	14.5	12.8	13.5	12.8	10.2	28.2	37.5B
13	51.2B	22.3	15.8B	74.3	90.8	14.4	12.7	13.1	12.6	9.49	29.9	37.3B
14	51.5	22.2	16.4	73.6	87.5	13.1	13.4	13.9	12.7	8.87	30.8	37.0B
15	52.5	21.7	15.6	83.2	83.3	11.5	13.5	13.2	12.4	8.85	31.3	36.8B
16	53.2	21.5	15.2B	83.5	78.5	11.7	12.1	10.9	13.9	8.69	30.3B	36.5B
17	52.9	21.5B	15.1	86.5	73.7	12.7	13.6	11.5	14.3	8.84	31.2	36.0B
18	52.2	21.5	16.7	86.9	70.9	12.1	14.2	11.9	11.9	11.0	31.7	35.4
19	50.8	20.9	17.7	88.0	67.2	11.0	14.6	11.5	11.9	9.51	30.7	34.6
20	49.0	20.4	21.9	87.3	61.8	12.5	14.4	10.5	12.6	8.59	29.6	33.5B
21	47.3B	20.2	39.5	85.5	58.1	12.0	14.5	10.3	11.4	8.48	28.6	32.1B
22	45.9	21.0B	76.0	84.0	50.6	13.1	15.7	10.2	11.9	8.13	27.5	31.2B
23	44.9	20.6B	104	83.0	43.8	14.9	18.3	9.86	12.1	7.86	27.2	30.4B
24	41.8B	20.8	121	81.2	45.0	15.0	19.2	9.73	11.3	8.44	26.6	30.0B
25	39.7B	20.6	140	80.9	43.1	15.6	20.3	10.1	11.1	9.47	27.5	29.6B
26	38.5B	20.6B	152	81.6	42.5	17.0	19.4	9.91	12.5	18.0	27.7	29.3B
27	37.7	20.5	156	80.0	42.0	15.4	19.3	9.80	12.1	20.2	27.0	29.0B
28	36.4	20.4B	153	79.8	41.1	16.4	19.9	10.0	11.2	21.2	26.7	28.8B
29	35.4B	20.1B	147	84.6	39.9	17.0	22.9	10.6	11.3	23.6	27.7	28.5B
30	33.7B		139	91.0	38.3	16.6	22.5	11.3	11.6	26.5	27.5	28.3B
31	32.5B		130		38.9		22.3			29.4		28.1B
Mean	48.5	23.4	55.1	81.9	79.2	16.6	16.1	13.7	13.2	12.5	28.8	32.9
Max	67.3	31.4	156	121	126	34.0	22.9	21.9	15.7	29.4	32.9	38.0
Min	32.5	20.1	15.1	56.4	38.3	11.0	12.1	9.73	11.1	7.86	26.6	27.1

Overall Mean      Maximum Daily      Minimum Daily  
35.2                      156 on Mar 27                      7.860 on Oct 23

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

1990 Daily Discharge (m<sup>3</sup>/s)

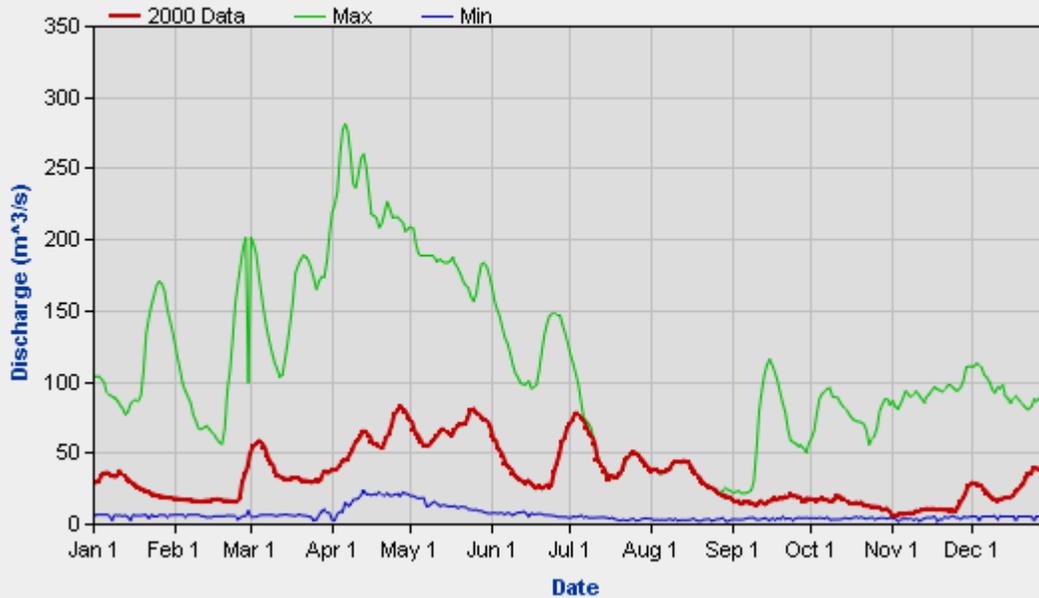
1990	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	20.4B	31.3B	33.2B	82.2	61.2	42.3	11.5	7.23	7.04	12.0	14.8	22.0
2	20.3B	31.2B	32.4B	78.5	64.5	38.3	11.9	7.36	6.22	12.4	15.4	20.2
3	20.2B	31.0B	31.8	77.0	67.5	37.9	12.2	7.18	5.60	11.6	15.1	19.5
4	20.6B	30.9B	32.0B	72.4	69.7	33.7	11.8	7.43	6.34	12.4	15.2	22.7B
5	23.6B	30.8B	31.3B	68.9	74.1	31.4	11.1	7.50	6.18	11.9	14.5	23.6B
6	23.9B	30.7	30.5B	66.4	76.2	31.1	10.6	7.62	6.37	11.8	17.0	23.8B
7	23.6B	30.2	30.0B	63.6	72.8	28.4	10.3	7.53	5.81	9.36	17.3	24.4B
8	23.2B	30.4	29.1B	60.9	69.9	27.2	10.8	7.62	5.59	8.31	16.9	24.7B
9	22.4	31.1	28.3	58.9	65.9	26.6	10.6	7.42	6.26	10.3	17.3	24.4B
10	21.5	31.9	28.2	57.2	60.0	25.1	9.43	7.00	6.50	15.5	18.1B	24.1B
11	22.0	32.4B	28.1	55.3	61.3	23.7	9.05	6.79	5.77	15.4	17.7B	23.9B
12	22.0B	32.7	32.2	54.2	59.4	24.3	8.33	6.45	6.35	14.5	17.3B	23.7B
13	22.0B	33.7	40.9	55.2	56.5	23.5	8.31	6.66	6.35	15.4	17.2B	23.5B
14	21.9B	34.0	50.8	56.6	55.5	21.8	8.43	7.23	7.35	16.6	20.4B	23.2B
15	21.9B	33.8	57.3	55.6	50.1	20.6	8.27	7.39	7.50	15.7	20.1	22.5B
16	21.9B	33.7B	70.7	56.5	44.2	19.2	8.60	7.15	6.29	14.4	20.0	22.4
17	22.5	33.6B	88.3	56.2	46.4	18.6	7.94	7.60	5.75	13.9	17.3	22.3
18	24.5	33.5B	102	57.5	50.8	18.3	7.93	7.50	6.06	15.0	18.5	22.5
19	24.5B	33.3B	113	56.8	48.0	15.7	7.12	6.62	6.33	15.2	18.1	23.4
20	24.4B	33.1B	121	57.8	47.2	15.1	7.71	6.89	6.22	14.1	17.6	23.3B
21	24.3B	32.8B	127	58.1	49.7	15.3	7.81	7.20	6.34	14.7	17.4	23.3
22	24.1B	32.6	132	57.7	52.0	14.0	7.70	7.40	7.22	14.0	17.6	25.0
23	23.9B	34.2	133	59.3	53.2	11.7	8.89	7.59	7.54	13.3	18.7	32.4
24	23.6B	34.1	130	59.6	54.2	12.3	9.47	7.51	7.96	13.4	19.4	35.4
25	25.4B	34.0B	125	59.9	55.1	11.8	9.19	7.49	8.18	13.6	19.9	37.7B
26	31.2	34.0B	119	57.9	55.5	12.9	9.00	7.63	7.51	12.7	18.3	39.3
27	31.1	33.8B	113	58.6	54.8	11.4	8.99	7.18	7.39	14.3	19.9	41.1
28	32.6	33.8B	108	60.2	53.7	11.2	8.83	7.38	7.66	15.1	21.2	42.8
29	32.0B		100	60.6	49.2	11.6	8.86	6.94	7.82	14.4	20.6B	45.8
30	31.7B		93.2	60.6	46.6	11.6	8.92	6.57	9.52	15.1	21.0	54.6
31	31.5B		86.0		46.5		7.31	6.86		15.0		61.8B
Mean	24.5	32.6	73.5	61.3	57.2	21.6	9.25	7.22	6.77	13.6	18.0	29.0
Max	32.6	34.2	133	82.2	76.2	42.3	12.2	7.63	9.52	16.6	21.2	61.8
Min	20.2	30.2	28.1	54.2	44.2	11.2	7.12	6.45	5.59	8.31	14.5	19.5

Overall Mean      Maximum Daily  
29.5                      133 on Mar 23

Minimum Daily  
5.590 on Sep 8

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

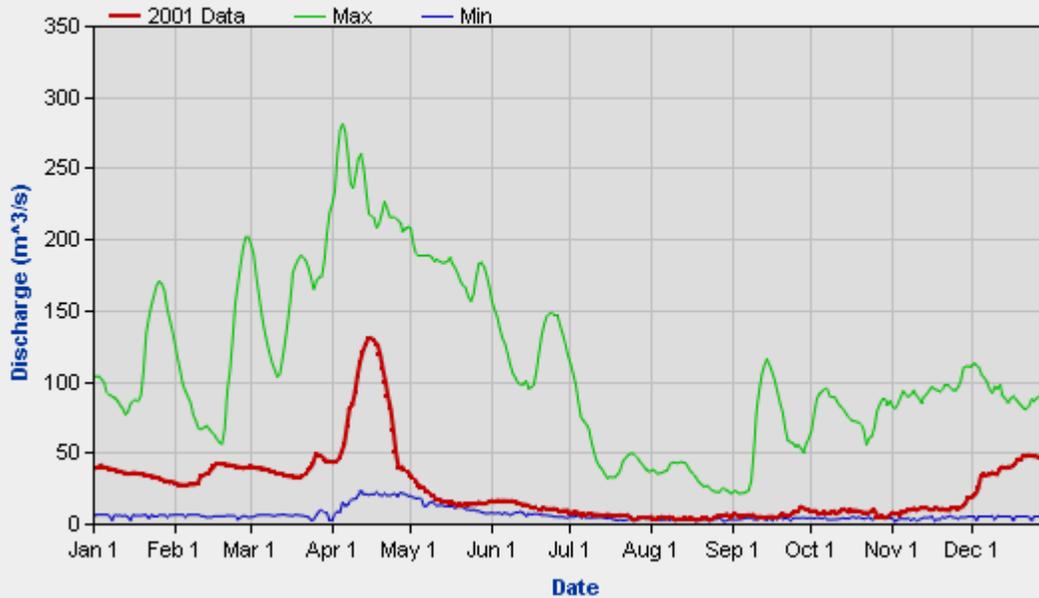
2000 Daily Discharge (m<sup>3</sup>/s)

2000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	29.5B	17.5B	49.6	37.5	72.8	61.3	70.5	37.1	16.6	17.1	5.02	28.0
2	29.0B	17.3B	54.3	37.8	66.1	59.2	73.3	38.0	15.4	16.7	5.59	28.1
3	30.0B	17.0B	56.1	38.1	63.7	53.0	77.6	37.8	15.7	15.8	6.20	28.0
4	33.0B	16.8B	57.8	41.0	60.6	51.7	77.4	36.0	14.2	16.9	6.65	27.1
5	35.3	16.6B	56.9	44.1	56.9	47.2	73.9	36.0	14.5	17.6	6.37	26.1
6	35.5	16.4B	53.5	44.4	55.0	42.2	72.2	36.5	14.9	16.8	6.74	23.9
7	34.8A	16.2B	47.5	45.4	54.9	40.4	67.2	37.4	15.1	16.4	7.20	21.7B
8	33.5B	16.0B	44.2	48.7	54.3	39.5	63.5	38.1	14.5	15.8	7.28	19.5B
9	33.0B	15.7B	41.7	52.0	57.1	34.8	62.0	42.6	13.4	15.6	7.25	18.0B
10	33.5B	15.5B	36.0B	57.0	59.2	33.0	55.7	43.4	13.3	16.3	8.61	17.0B
11	36.6	15.3B	33.5B	58.4	61.3	31.7	45.1	43.4	14.1	19.5	8.54	16.0B
12	35.4	15.7B	33.0B	61.4	64.2	30.5	42.8	43.2	15.3	18.7	9.35	17.0B
13	33.0B	15.9B	32.0B	64.7	66.0	28.9	41.1	43.8	13.8	17.4	9.81	17.5B
14	31.0B	16.0B	31.5B	64.4	65.9	28.1	36.5	43.5	14.4	17.1	10.2	17.0B
15	29.5B	16.0B	31.0B	61.9	64.0	29.9	31.1	43.1	15.6	14.8	9.99	18.3B
16	28.0B	16.8B	31.4B	57.0	62.5	28.5	31.5	39.8	16.3	14.2	10.2	18.4B
17	27.0B	17.0B	31.7	56.0	61.8	26.6	33.3	36.9	17.8	14.1	10.0	19.5B
18	25.5B	16.8B	32.1	56.0	66.1	25.1	32.8	35.4	16.8	14.6	9.63	22.0B
19	24.5B	16.2B	31.8	55.3	68.8	26.0	32.8	32.6	17.6	13.9	9.90	24.0B
20	23.5B	16.0B	30.9	53.1	69.5	24.8	35.0	29.8	17.6	14.6	9.64	26.0B
21	22.8B	15.9B	30.1	55.6	69.9	25.8	38.3	27.9	18.8	13.2	9.45	28.0B
22	22.0B	15.7B	29.9	60.9	70.5	26.9	44.3	26.6	18.2	12.4	9.34	32.0B
23	21.0B	15.5B	29.5	63.7	74.0	25.9	46.6	25.7	20.4	12.2	8.98	35.0B
24	20.3B	15.3B	29.0	69.3	79.5	27.2	48.8	24.8	19.2	11.9	9.15	35.5B
25	19.5B	15.7B	29.5	76.6	80.3	36.2	49.8	24.0	19.1	11.7	9.03	39.0B
26	19.3B	18.0B	30.3	79.2	78.7	42.6	49.4	23.1	18.7	11.5	11.1	38.6B
27	18.9B	29.0B	29.4	82.1	76.4	48.4	48.2	20.4	18.0	11.3	14.8	38.4B
28	18.5B	35.0B	31.3	81.7	74.6	57.6	45.5	19.3	16.1	9.77	17.9	38.2B
29	18.2B	40.0B	36.8	78.1	73.2	60.8	43.1	19.4	17.4	9.88	21.3	38.0B
30	18.0B		35.8	74.4	72.5	67.1	40.7	18.7	17.3	10.1	26.2	37.9B
31	17.8B		36.2		68.8		38.4	18.0		8.29		37.8B
Mean	27.0	18.2	37.6	58.5	66.7	38.7	49.9	33.0	16.3	14.4	10.0	26.9
Max	36.6	40.0	57.8	82.1	80.3	67.1	77.6	43.8	20.4	19.5	26.2	39.0
Min	17.8	15.3	29.0	37.5	54.3	24.8	31.1	18.0	13.3	8.29	5.02	16.0

Overall Mean      Maximum Daily      Minimum Daily  
33.2                      82.1 on Apr 27                      5.020 on Nov 1

A - Partial Day      B - Ice Conditions      E - Estimated

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

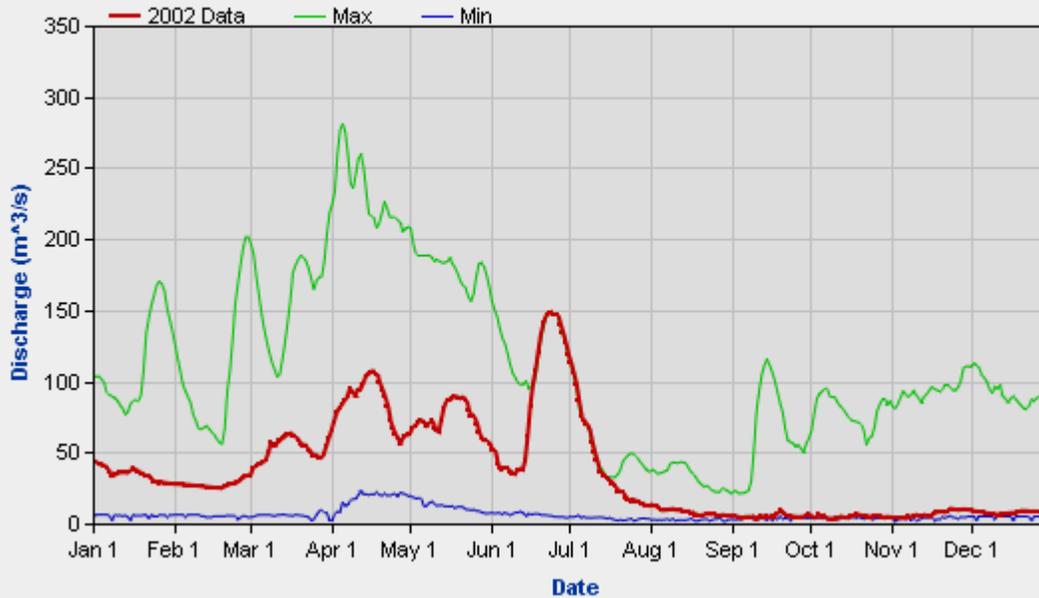
2001 Daily Discharge (m<sup>3</sup>/s)

2001	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	38.5B	28.6	39.5B	43.6	35.8	15.2	8.97	4.25	4.34	9.24	5.97	18.1
2	39.2	27.4	40.0B	43.2	34.1	15.8	7.52	4.55	5.09	8.55	7.47	18.4
3	39.9	27.2B	39.5B	43.4	32.6	15.3	7.65	3.31	6.55	8.77	6.72	19.3
4	40.7	27.0B	39.0B	44.1	29.1	15.9	7.72	3.06	5.20	8.23	7.12	20.7
5	39.4	26.9B	38.7	46.3	26.7	15.7	7.46	3.93	4.60	6.68	6.17	25.4
6	39.1	27.2	38.7	51.0	25.7	15.8	6.15	4.52	5.31	7.13	7.86	33.9
7	38.5	27.4	38.4	56.2	24.9	15.8	6.44	3.71	5.68	7.76	8.18	34.4
8	38.1	27.5	37.8	68.9	23.0	15.7	6.21	3.74	5.80	7.00	9.53	33.9
9	37.5B	27.8B	37.2	81.5	21.9	15.6	6.72	4.44	5.71	7.56	9.60	34.4
10	37.0B	28.5B	36.6	83.5	19.4	15.6	6.32	3.77	5.77	7.85	10.5	35.7
11	36.5B	33.0B	36.0	91.8	19.0	14.8	6.28	2.66	4.39	8.40	9.32	34.8
12	36.0B	34.0B	35.0B	104	16.6	14.4	6.08	2.98	4.53	7.16	10.2	34.5
13	35.5B	35.0B	35.1	114	16.6	13.6	5.88	3.06	4.41	8.19	10.9	38.0
14	34.9	35.3	34.8	121	15.8	13.3	5.67	2.98	3.75	9.70	10.9	39.5
15	35.0B	37.9	33.9	126	15.2	13.0	5.66	3.56	4.31	9.43	10.9	39.1
16	35.5B	40.0B	33.3	130	14.8	12.4	6.17	3.45	4.63	8.15	9.85	39.6
17	35.3B	42.2	33.1	130	14.7	11.4	5.93	4.00	4.62	9.60	9.75	39.7
18	35.0B	42.0B	33.0	129	14.9	10.9	5.52	3.23	4.32	9.03	10.5	40.4
19	34.7	41.8B	32.8	126	13.5	11.9	5.19	2.38	4.25	8.97	10.7	42.7
20	34.5B	41.7	32.7	119	13.2	9.92	5.40	2.67	5.55	8.43	9.68	45.1
21	34.0B	41.2B	32.4	109	13.4	9.27	5.78	3.38	6.63	8.00	10.3	45.0
22	33.5B	41.0B	33.5	100	13.2	10.7	5.60	3.66	5.97	7.60	9.54	47.9
23	33.0	40.5B	35.7	89.2	13.5	10.1	5.50	3.61	5.57	7.46	9.29	47.3
24	32.8	40.0B	37.3	80.7	13.2	10.1	5.64	2.51	5.90	7.50	9.52	47.9
25	32.2B	39.8B	39.1	66.1	13.4	10.1	3.98	3.03	7.44	9.10	11.1	47.6
26	31.8B	39.4	42.5	49.9	13.8	10.2	2.68	4.38	8.04	9.38	11.0	47.2
27	30.9	38.8	48.4	39.9	13.6	9.62	2.86	4.69	8.49	4.58	10.0	47.0
28	30.0B	39.3B	47.9	38.6	14.7	8.33	3.70	5.33	11.8	4.52	11.2	46.8
29	29.6		47.0	39.4	14.1	8.84	4.06	5.30	10.7	5.30	12.0	46.2
30	28.8		45.5	38.0	13.9	8.97	4.24	6.03	10.0	4.09	14.4	45.9
31	29.2		43.9		14.3		3.98	6.16		4.61		45.0
Mean	35.1	34.9	38.0	80.1	18.7	12.6	5.71	3.82	5.98	7.68	9.67	38.1
Max	40.7	42.2	48.4	130	35.8	15.9	8.97	6.16	11.8	9.70	14.4	47.9
Min	28.8	26.9	32.4	38.0	13.2	8.33	2.68	2.38	3.75	4.09	5.97	18.1

Overall Mean      Maximum Daily      Minimum Daily  
24.1                      130 on Apr 16                      2.380 on Aug 19

A - Partial Day      B - Ice Conditions      E - Estimated

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

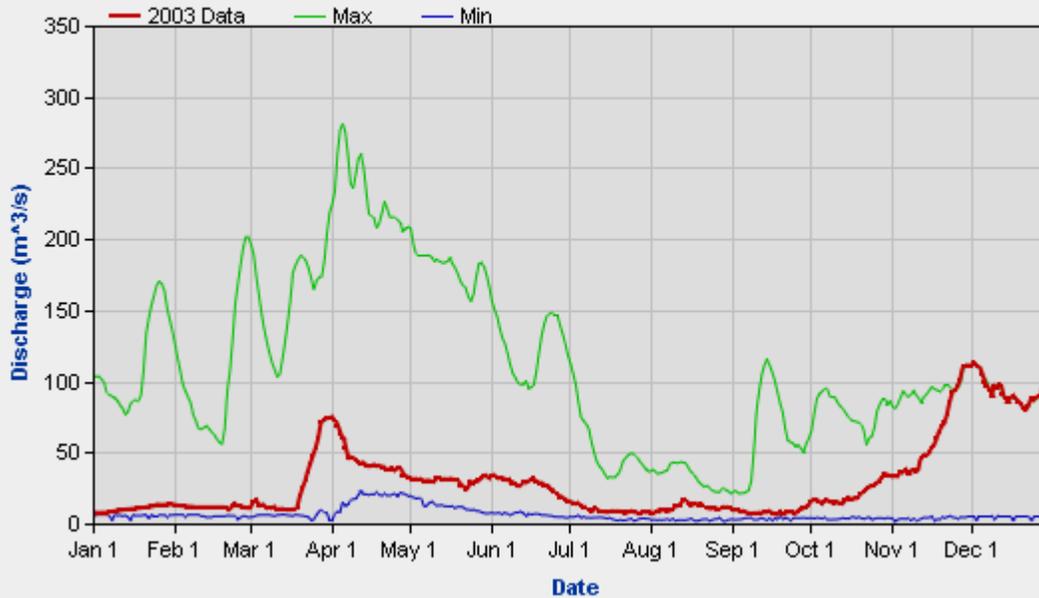
2002 Daily Discharge (m3/s)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	43.7B	27.8B	33.9	60.2	62.4	56.4	119	12.5	5.54	6.34	4.44	9.59
2	43.1B	27.7B	33.4	65.5	63.6	51.5	113	13.2	5.14	5.42	3.96	9.20
3	42.0B	27.6B	38.7	71.9	67.9	51.6	106	12.4	5.23	4.23	3.93	8.75B
4	41.4B	27.5B	40.6	77.8	69.3	42.6	98.4	12.1	4.71	4.71	3.99	8.48B
5	40.6B	27.3B	41.8	81.7	71.3	38.6	86.3	11.3	3.55	6.69	3.86	8.29
6	39.8B	27.1B	42.5	83.9	72.4	38.4	75.4	9.35	4.05	4.14	3.95	7.98
7	36.2B	26.9B	42.8	86.7	71.5	39.2	72.8	9.47	4.58	5.49	3.78	7.80
8	33.6B	26.7	45.5	89.1	68.4	39.2	70.5	9.59	4.61	3.51	5.24	7.17
9	34.4	26.6	50.0	94.6	69.8	36.4	67.0	9.94	4.55	3.39	4.63	6.98
10	35.4	26.5B	57.8	91.8	72.8	35.5	58.0	10.2	4.75	3.45	4.97	6.76
11	35.8	26.2B	54.9	89.8	67.3	34.6	50.6	9.65	3.34	3.50	5.92	6.35
12	36.0B	26.0B	56.2	94.5	65.5	37.8	44.4	9.39	3.83	3.60	5.00	6.22
13	35.9B	25.8B	58.3	94.2	64.2	38.3	36.2	9.18	5.03	4.77	5.26	6.26
14	35.8B	25.6B	59.8	98.2	73.1	37.7	35.9	8.63	4.75	4.56	5.95	6.32
15	37.0B	25.4B	61.0	103	81.9	44.3	33.6	8.40	5.06	4.12	5.53	6.66
16	39.0B	25.2B	62.4	105	86.9	61.5	31.9	8.54	4.73	4.07	4.93	7.10
17	37.7	25.1B	63.3	107	87.2	83.0	30.8	7.56	5.05	5.05	5.70	7.32
18	36.8	25.0B	62.3	107	88.0	98.2	28.5	7.54	4.88	5.33	7.64	7.38
19	35.6B	25.0B	61.3	105	89.2	108	26.8	6.29	6.83	6.33	7.87	7.50
20	34.6	26.0B	58.9	98.9	88.8	121	22.9	5.64	9.25	6.25	8.27	8.10
21	33.6	27.1	55.8B	94.4	87.9	133	22.6	5.73	8.20	5.68	8.23	8.76
22	33.3	27.6	55.2B	89.0	88.5	141	22.2	6.15	6.49	5.33	7.95	8.74
23	32.2	28.2	54.9	82.8	87.5	147	18.3	6.62	5.59	4.95	8.60	8.76
24	29.4B	28.7	52.1	72.6	79.6	148	17.1	6.69	5.49	4.89	10.3	8.54
25	29.2B	29.1	49.9	67.2	76.1	149	16.0	6.51	4.85	4.81	10.1	8.37
26	28.3B	30.2	48.1	63.1	75.8	147	16.2	6.75	4.63	5.18	9.78	8.48
27	28.8B	32.3	48.0	59.8	70.7	147	16.0	5.63	4.50	5.58	9.45	8.40
28	28.6B	33.3	46.6	55.6	63.9	140	15.4	5.52	4.53	5.01	9.73	8.47
29	28.3B		45.9	59.3	59.9	134	14.1	5.91	4.84	4.68	9.93	8.03
30	28.1B		48.8	62.0	58.7	127	13.4	5.69	5.47	4.28	9.90	7.73
31	27.9B		54.1		58.8		12.7	5.26		4.61		7.93
Mean	34.9	27.3	51.1	83.7	73.8	83.6	44.9	8.30	5.14	4.84	6.63	7.82
Max	43.7	33.3	63.3	107	89.2	149	119	13.2	9.25	6.69	10.3	9.59
Min	27.9	25.0	33.4	55.6	58.7	34.6	12.7	5.26	3.34	3.39	3.78	6.22

Overall Mean      Maximum Daily      Minimum Daily  
36.0                      149 on Jun 25                      3.340 on Sep 11

A - Partial Day      B - Ice Conditions      E - Estimated

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

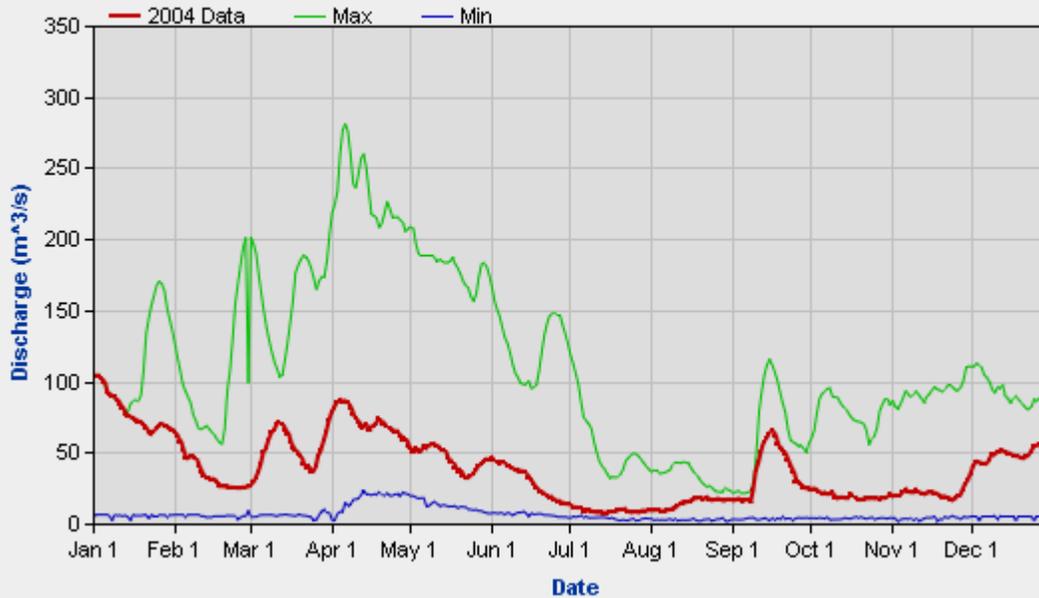
2003 Daily Discharge (m<sup>3</sup>/s)

2003	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	7.77	13.1B	10.9B	74.3	32.5	31.8	15.8	8.21	11.0	12.7	33.5	111
2	7.53	12.7B	11.0B	74.9	31.6	34.0	15.2	7.57	9.67	16.0	33.1	111
3	7.39	12.5B	14.9B	73.2	31.1	33.8	14.4	7.52	9.63	16.7	33.4	113
4	7.52	12.3B	16.3B	68.6	31.3	32.3	13.9	8.69	9.48	16.2	33.1	112
5	7.55	12.1B	12.4B	63.2	30.8	32.0	14.2	8.38	8.47	15.5	36.2	110
6	7.51	11.9B	12.9B	60.9	31.1	32.0	12.4	9.44	8.60	14.2	36.1	105
7	8.20B	11.8B	12.9B	52.7	30.0	31.2	11.6	9.38	7.84	15.5	37.9	99.6
8	8.45B	11.6B	11.1B	45.6	30.0	30.4	11.5	8.68	7.18	16.3	35.5	96.3
9	8.70B	11.4B	11.2B	46.6	30.1	31.4	9.30	9.13	6.86	15.4	37.1	93.4
10	9.00B	11.4B	11.0B	46.0	29.6	28.4	8.64	9.78	7.18	14.8	37.2	90.2
11	9.25B	11.4B	11.8B	45.0	29.1	27.6	9.45	12.1	7.21	14.6	36.9	96.8
12	9.50B	11.4B	10.1B	43.0	31.9	26.5	10.9	12.5	7.44	14.8	37.3	95.7
13	9.80B	11.4B	10.1B	42.3	32.1	26.3	8.49	13.3	7.39	14.3	46.9	98.0
14	10.0B	11.4B	10.2B	42.6	30.9	29.1	8.41	16.3	7.92	13.7	48.1	90.4
15	10.1B	11.4B	9.79B	41.1	31.2	28.8	8.32	17.0	8.02	16.5	47.8	88.3
16	10.3B	11.4B	9.59B	40.4	31.0	29.8	8.01	13.5	8.61	17.8	49.8	86.1
17	10.5B	11.4B	9.65B	40.6	31.4	30.9	8.39	12.7	7.41	17.3	53.6	88.6
18	10.8B	11.4B	9.86B	41.2	31.1	31.8	8.64	13.5	6.76	17.5	55.1	89.9
19	11.0B	11.4B	10.0B	40.4	30.7	29.5	8.45	13.8	6.47	17.7	59.8	88.2
20	11.2B	11.3B	11.9B	40.6	30.8	28.6	8.54	13.2	7.96	18.9	65.1	85.5
21	11.4B	11.0B	19.7	39.9	26.4	28.4	8.34	13.4	6.71	20.4	68.6	83.7
22	11.8B	10.3B	25.3	39.4	26.2	27.3	7.83	12.7	6.64	22.9	70.9	80.8
23	12.0B	12.1B	30.3	38.0	24.5	26.2	7.57	10.8	8.31	24.4	76.7	79.7
24	12.4B	13.8B	37.1	38.1	24.6	25.9	7.88	10.6	8.16	25.8	85.5	82.9
25	13.2B	12.5B	42.7	38.9	29.3	24.0	8.61	10.6	8.18	26.4	92.0	87.9
26	13.1B	12.1B	48.1	37.3	28.2	22.9	8.19	10.9	7.32	27.0	94.4	86.9
27	13.0B	11.6B	53.6	38.7	30.0	20.7	7.84	10.3	8.94	28.6	96.6	88.7
28	13.1B	11.1B	60.2	39.2	30.2	18.9	7.07	9.85	10.3	29.9	101	89.9
29	13.3B		70.8	34.1	31.9	18.3	7.65	11.8	10.8	32.7	110	91.4
30	13.4B		72.7	33.7	33.4	17.0	8.22	11.3	11.9	35.0	111	100
31	13.4B		74.0		33.4		8.01	11.4		34.2		101
Mean	10.4	11.8	24.6	46.7	30.2	27.9	9.73	11.2	8.28	20.1	58.7	94.3
Max	13.4	13.8	74.0	74.9	33.4	34.0	15.8	17.0	11.9	35.0	111	113
Min	7.39	10.3	9.59	33.7	24.5	17.0	7.07	7.52	6.47	12.7	33.1	79.7

Overall Mean      Maximum Daily      Minimum Daily  
29.6                      113 on Dec 3                      6.470 on Sep 19

A - Partial Day      B - Ice Conditions      E - Estimated

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

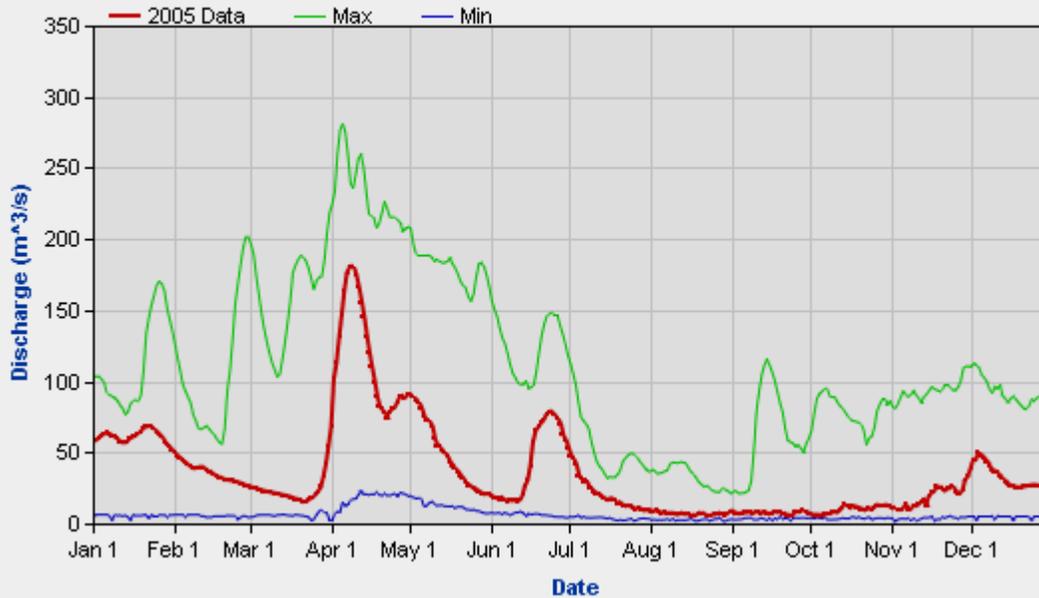
2004 Daily Discharge (m<sup>3</sup>/s)

2004	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	103	65.0B	27.0B	77.9	53.3	46.4	13.5	9.29	16.3	24.2	19.2	35.6
2	104	61.0B	29.0B	81.9	50.7	44.9	11.6	9.42	16.6	24.4	19.7	40.8
3	104	58.0B	32.0B	85.3	53.7	42.8	11.4	9.62	17.3	23.7	19.6	43.6
4	102	52.0B	36.4	86.6	51.4	42.4	11.1	9.45	16.2	22.3	20.2	43.0B
5	99.3B	46.0B	41.9	86.1	50.4	43.3	11.1	8.64	15.8	21.3	22.3	42.3B
6	92.0B	46.0B	50.1	86.0	54.2	42.8	8.96	8.96	16.6	21.7	23.9	42.0B
7	91.0B	47.0B	53.3	85.2	52.6	40.3	9.13	9.37	16.9	20.8	22.5	41.8B
8	90.0B	47.0B	59.2	81.6	55.0	40.5	9.59	9.88	14.9	20.8	22.0	45.0B
9	89.0B	46.0B	63.8	76.5	55.7	38.6	8.70	10.5	23.4	21.9	22.0	48.6
10	87.0B	41.0B	65.7	74.1	55.9	37.5	8.17	11.1A	37.3	18.5	23.7	48.6
11	84.0B	37.0B	69.7	71.8	54.6	37.8	7.80	12.6E	42.9	17.8	21.8	50.2
12	81.5B	34.0B	71.9	69.2	53.9	36.9	7.71	14.2A	50.6	18.3	21.3	50.5
13	77.4B	32.0B	69.9	67.5	51.8	36.6	7.86	14.4	57.8	18.3	20.7	51.2
14	76.0B	32.0B	66.4	70.1	51.7	35.8	7.46	14.9	59.6	17.9	21.7	50.0B
15	75.0B	31.0B	63.7	66.4	46.6	32.9	7.46	15.5	63.5	17.8	21.9	49.5B
16	74.0B	31.0B	57.5	67.9	43.7	30.2	8.20	16.0	66.5	20.6	22.1	49.0B
17	73.0B	30.0B	53.9	69.2	44.1	27.6	8.38	17.0	62.3	20.2	21.4	48.0B
18	72.0B	26.0B	51.9	70.2	39.7	25.5	8.41	17.9	56.3	18.0	20.8	47.5B
19	71.0B	26.3B	49.2	74.3	36.9	22.9	9.20	18.1	53.1	16.9	19.8	47.0B
20	70.0B	26.0B	47.5	69.7	37.9	22.0	9.88	18.2	52.5	16.9	18.8	46.2B
21	67.0B	26.0B	42.0B	70.5	33.4	21.0	9.94	17.4	48.8	17.4	18.8	46.0B
22	64.6B	25.5B	39.8B	68.9	32.4	19.4	10.1	18.3	44.4	17.6	18.0	47.0B
23	63.0B	25.3B	40.7	67.0	32.3	18.7	8.46	17.4	40.2	17.7	17.5	48.0B
24	65.0B	25.2B	36.5	66.1	33.1	18.5	7.90	16.4	36.5	17.8	16.5	51.0B
25	67.0B	25.0B	36.7	64.8	35.5	16.8	8.12	16.7	30.1	17.6	17.8	54.0B
26	69.0B	25.0B	40.0	64.8	37.7	15.8	8.22	17.3	28.8	17.8	19.5	55.0B
27	70.0B	25.4B	48.1	62.3	40.8	15.6	7.84	17.0	28.2	17.4	19.6	55.5B
28	69.0B	25.5B	51.8	59.4	42.1	14.5	8.70	16.3	25.4	17.9	24.5	54.5B
29	68.0B	26.0B	58.2	60.1	44.0	14.0	8.96	16.3	24.8	18.0	28.4	54.2B
30	67.0B		64.4	55.3	45.1	13.7	9.00	16.9	24.7	18.7	31.1	54.0B
31	66.0B		72.3		44.8		9.51	16.8		20.8		55.0B
Mean	79.1	36.0	51.3	71.9	45.6	29.9	9.11	14.3	36.3	19.4	21.2	48.2
Max	104	65.0	72.3	86.6	55.9	46.4	13.5	18.3	66.5	24.4	31.1	55.5
Min	63.0	25.0	27.0	55.3	32.3	13.7	7.46	8.64	14.9	16.9	16.5	35.6

Overall Mean      Maximum Daily      Minimum Daily  
38.5                      104 on Jan 2                      7.460 on Jul 14

A - Partial Day      B - Ice Conditions      E - Estimated

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

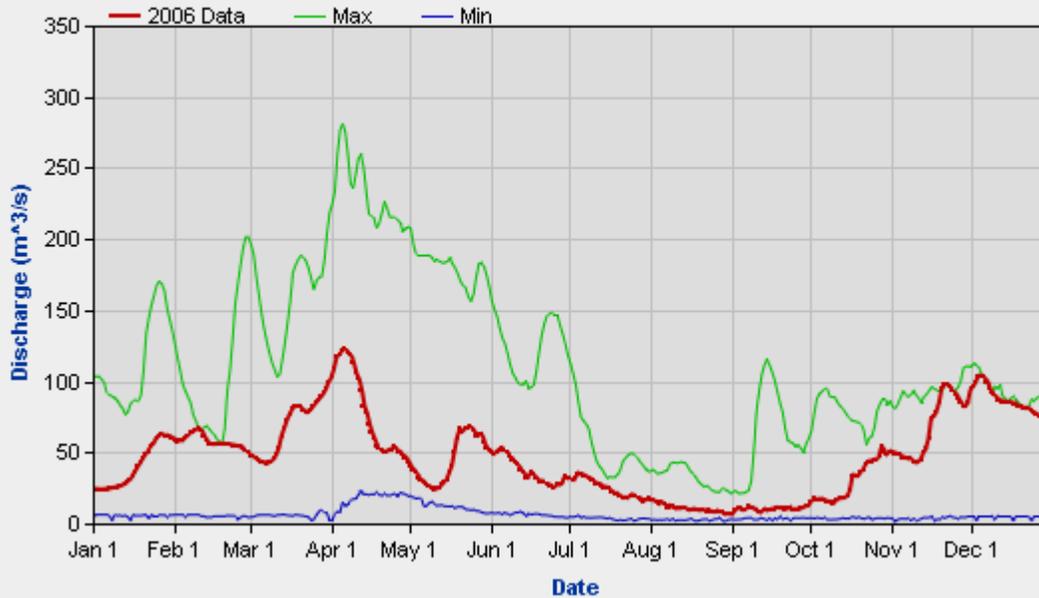
2005 Daily Discharge (m<sup>3</sup>/s)

2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	57.0B	50.0B	26.2B	55.3	91.0	20.6	53.7	9.33	8.43	7.52	12.0	33.4
2	59.0B	48.0B	25.8B	68.9	90.5	19.5	48.3	9.00	8.67	6.48	10.7	38.9
3	60.0B	46.0B	25.2B	102	89.8	18.4	46.6	8.86	7.61	6.21	11.6	45.2
4	62.0B	45.0B	24.6B	113	87.2	17.7	41.7	9.23	6.94	6.25	9.47	44.9
5	63.0B	43.0B	24.1B	131	85.7	17.5	34.2	8.22	7.29	6.00	9.77	50.2
6	64.0B	41.5B	23.5B	147	81.2	18.2	32.5	7.55	7.52	5.87	10.4	48.3B
7	63.0B	40.0B	23.0B	164	75.5	16.7	29.4	7.75	7.71	6.39	13.7	46.0B
8	62.0B	39.0B	22.5B	177	73.4	15.7	30.3	7.30	7.85	6.74	10.2	44.0B
9	61.0B	39.0B	22.1B	181	72.6	16.4	25.8	7.34	7.97	7.03	10.3	40.0B
10	60.0B	39.5B	21.8B	181	68.8	16.2	24.9	7.28	7.58	7.76	12.5	38.4B
11	58.0B	39.7B	21.4B	175	59.9	16.5	23.1	6.60	8.22	8.18	12.5	37.0B
12	57.0B	39.4B	21.0B	166	55.1	16.0	21.5	6.42	7.83	7.99	13.5	36.0B
13	57.0B	38.0B	20.6B	156	54.6	16.4	20.5	7.25	7.68	9.16	15.2	34.0B
14	58.0B	36.5B	20.2B	145	51.3	20.4	19.4	6.80	7.80	11.7	16.6	32.3B
15	60.0B	36.0B	19.7B	132	50.1	27.2	17.9	6.59	7.39	14.5	13.0	30.0B
16	61.0B	34.5B	19.2B	120	47.2	30.9	16.9	6.87	6.80	12.0	19.3	28.5B
17	62.0B	33.5B	18.9B	110	43.5	41.0	17.5	5.63	7.47	11.1	21.8	27.0B
18	63.0B	32.5B	18.0B	99.9	41.3	57.4	17.5	5.97	8.31	12.2	22.8	26.2B
19	65.0B	32.0B	17.5B	89.1	39.6	65.3	16.5	5.97	7.91	11.9	26.0	25.8B
20	67.0B	31.0B	17.0B	82.0	36.9	68.4	14.7	7.32	8.15	11.2	25.4	25.4B
21	68.0B	30.7B	16.3B	80.6	34.1	71.1	14.7	7.09	7.03	10.5	25.6	25.6B
22	68.5B	30.4B	15.3	78.1	31.8	72.3	13.3	7.00	6.90	9.50	23.2	26.0B
23	68.0B	30.2B	15.5B	74.9	30.0	76.9	12.3	5.78	5.99	9.99	24.6	26.3B
24	67.0B	29.6B	16.6B	78.7	27.3	79.0	12.6	5.59	5.76	10.6	24.7	26.7B
25	65.0B	29.0B	17.8B	80.6	26.2	78.3	12.0	6.07	6.04	10.1	26.6	27.0B
26	63.0B	28.5B	18.8B	81.3	25.0	76.5	11.3	6.34	8.42	11.4	22.5	27.2B
27	61.0B	27.5B	21.0B	85.0	24.3	74.8	10.4	6.78	8.10	13.0	21.7	27.0B
28	58.0B	27.0B	23.0B	89.3	23.0	70.3	10.7	7.32	8.67	12.7	21.5	26.6B
29	56.0B		26.0B	89.6	21.7	62.4	10.3	6.57	9.70	12.6	24.1	26.2B
30	54.0B		33.5	87.9	20.7	59.1	9.28	6.06	7.81	12.9	31.4	25.6B
31	52.0B		42.6		20.9		9.45	7.10		12.8		25.0B
Mean	61.3	36.3	21.9	114	51.0	41.9	21.9	7.06	7.65	9.75	18.1	32.9
Max	68.5	50.0	42.6	181	91.0	79.0	53.7	9.33	9.70	14.5	31.4	50.2
Min	52.0	27.0	15.3	55.3	20.7	15.7	9.28	5.59	5.76	5.87	9.47	25.0

Overall Mean      Maximum Daily      Minimum Daily  
35.2                      181 on Apr 9                      5.590 on Aug 24

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

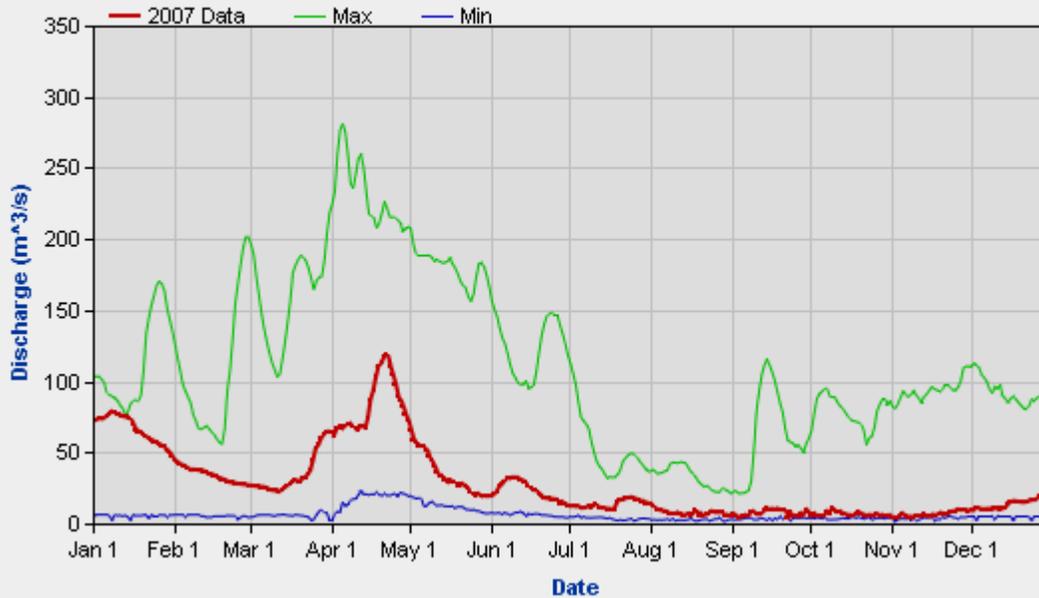
2006 Daily Discharge (m<sup>3</sup>/s)

2006	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	24.5B	59.4	49.8B	100	44.0	51.8	31.6	17.6A	6.67	12.5	50.7	85.3
2	24.3B	57.9	48.0B	103	40.5	50.5	32.5	16.6	6.36	15.5	50.2	94.7
3	24.1B	58.3	47.0B	109	38.2	49.3	30.6	16.2A	9.60	17.8	49.7	96.4
4	24.1B	58.4	45.8B	117	36.7	50.9	31.9	15.1	10.7	17.0	49.0	100
5	24.2B	60.0B	44.2B	119	32.9	52.5	35.6	13.9	10.6	17.3	48.7	104
6	24.4B	62.0B	43.5B	122	30.5	53.2	34.5	14.8	9.63	17.4	46.8	104 B
7	24.6B	64.0B	43.0B	123	29.7	52.2	34.3	14.0	9.80	16.7	46.2	103 B
8	25.0B	65.0B	42.7B	120	28.2	49.9	33.3	11.9	12.1	15.8	45.6	100 B
9	25.5B	66.0B	43.0B	119	26.3	48.3	32.3	12.8	11.3	15.4	45.6	95.0B
10	25.9B	67.0B	44.0B	113	25.3	44.6	31.4	12.0	10.6	13.4	43.9	92.0B
11	26.3B	66.0B	45.9	106	24.0	43.3	30.3	10.7	10.1	15.3	42.9	90.4
12	27.2B	62.0B	48.8	102	24.6	41.5	28.4	10.7	7.89	17.2	43.9	87.5
13	27.9B	59.0B	53.5	94.3	25.5	38.2	27.7	10.8	8.29	17.7	45.5	87.0
14	29.0B	56.5B	62.1	83.3	27.6	36.1	27.1	11.2	9.96	18.1	50.1	86.1
15	31.0B	56.0B	67.3	78.2	28.9	32.9	25.8	10.8	9.24	18.6	52.9	85.8
16	33.7B	55.8B	72.7	70.2	31.4	32.4	25.5	9.78	9.83	19.7	60.4	85.6
17	37.0B	56.0B	77.1	64.4	36.1	36.6	24.7	9.87	10.3	24.1	73.8	85.5
18	40.0B	56.4B	80.6	59.9	41.1	34.8	22.2	10.3	10.5	34.2	75.8	84.7
19	43.0B	56.2B	82.5	55.1	50.7	32.4	21.3	10.0	11.3	33.5	79.0	84.6
20	46.0	56.1B	82.7	53.9	60.8	30.0	21.1	9.44	11.0	33.4	85.4	83.0B
21	49.3	56.0B	82.0	51.5	66.6	29.9	19.6	9.56	10.9	36.5	94.7	82.0B
22	51.0B	55.8B	80.3	50.6	65.0	29.9	18.5	9.57	10.5	38.4	97.9	81.5B
23	55.0B	55.3B	78.8	51.0	67.2	27.5	18.4	8.92	10.6	42.5	98.0	81.3B
24	56.0B	55.0B	78.9	52.1	67.5	27.3	18.4	9.15	11.5	43.9	96.0	81.0B
25	60.0B	54.5B	79.9	52.1	68.3	26.4	20.0	8.48	9.90	44.1	94.5	80.0B
26	62.0B	54.0B	82.6	54.0	65.6	25.4	20.1	8.19	10.1	45.0	91.6	78.0B
27	63.0B	53.5B	85.0	50.8	61.7	27.6	19.5	9.03	10.2	45.1	88.3	77.0B
28	62.0B	52.0B	87.2	50.6	62.5	27.4	17.6	8.41	10.6	47.3	85.0	76.0B
29	62.0		89.2	49.5	63.0	27.9	17.5	8.06	11.5	54.0	83.2	75.0B
30	61.4		91.9	46.9	57.0	33.8	16.1	6.76	12.3	49.9	82.6	73.0B
31	60.5		95.1		53.3		16.8A	6.88		48.9	72.0B	
Mean	39.7	58.4	66.3	80.7	44.5	38.2	25.3	11.0	10.1	28.6	66.6	86.8
Max	63.0	67.0	95.1	123	68.3	53.2	35.6	17.6	12.3	54.0	98.0	104
Min	24.1	52.0	42.7	46.9	24.0	25.4	16.1	6.76	6.36	12.5	42.9	72.0

Overall Mean      Maximum Daily      Minimum Daily  
46.2                      123 on Apr 7                      6.360 on Sep 2

A - Partial Day                      B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

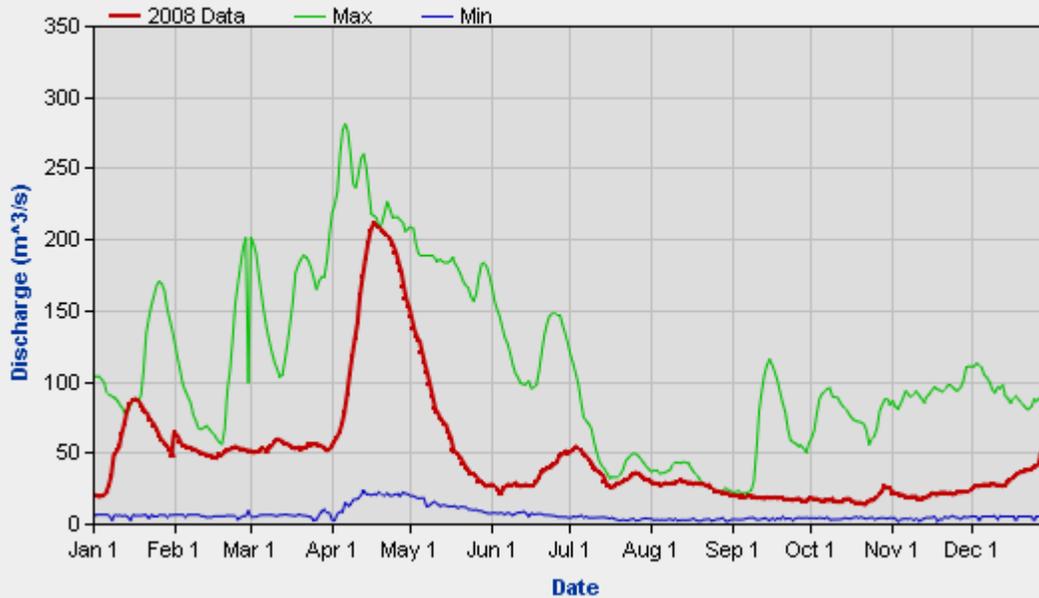
2007 Daily Discharge (m<sup>3</sup>/s)

2007	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	72.0B	45.0B	27.0B	64.6	72.3	19.4	12.8	14.1	5.58	8.76	5.84	9.00B
2	73.0B	43.0B	26.8B	64.1	65.4	20.1	12.3	13.6	6.45	5.76	4.47	9.30B
3	73.8	42.0B	26.5B	62.3	58.7	20.9	12.4	12.2	6.17	6.92	4.32	9.40B
4	73.6	41.0B	26.2B	66.8	58.1	22.7	12.1	10.1	4.71	5.83	4.23	11.0B
5	74.3	40.0B	26.0B	68.0	54.9	26.0	12.2	9.58	4.76	5.68	5.35	10.8B
6	75.8	39.0B	25.8B	66.9	54.5	28.0	11.2	9.12	5.20	5.48	6.81	10.2B
7	77.2	38.0B	25.6B	68.1	54.6	29.8	11.1	8.71	5.97	5.55	5.17	10.1B
8	78.8	38.0B	25.0B	70.1	52.2	32.2	11.5	8.16	5.34	8.66	4.82	10.3B
9	78.0B	37.8B	24.2B	70.4	47.2	31.8	12.3	7.20	8.21	7.57	4.80	10.4B
10	77.0B	37.5B	23.5B	68.9	44.3	32.5	11.8	7.03	8.38	10.9	4.70	10.0B
11	76.8B	37.3B	23.2B	66.6	40.6	32.4	12.8	7.14	6.87	9.40	5.59	10.6B
12	75.5B	37.0B	23.2	66.0	36.1	32.2	13.6	7.65	6.59	8.21	5.33	10.7B
13	75.0B	36.0B	22.8	68.7	34.1	31.0	11.3	6.41	6.67	8.55	5.50	10.0B
14	75.0B	35.0B	24.0	68.4	33.9	30.1	11.0	6.15	9.26	7.34	6.31	10.6B
15	74.0B	34.5B	25.8	67.8	31.1	28.9	11.0	6.24	10.6	6.69	5.46	11.5B
16	70.0B	34.0B	26.1	74.9	29.5	27.3	10.5	6.89	10.1	6.01	4.99	13.5B
17	66.0B	33.0B	28.7	87.5	30.4	25.0	10.3	6.12	10.3	5.88	6.23	15.2B
18	65.0B	32.0B	29.8	93.9	29.7	23.7	10.1	6.86	10.0	5.78	5.96	15.8B
19	64.0B	31.5B	30.5	103	29.4	23.5	10.4	9.70	10.5	6.56	6.23	15.7B
20	63.0B	30.5B	30.1	111	27.0	20.8	15.4	5.63	9.86	7.94	7.47	15.4B
21	61.0B	30.0B	30.1	113	27.5	19.8	16.7	7.02	9.69	7.16	7.12	15.1B
22	60.0B	29.0B	31.7	117	27.5	18.2	17.3	5.82	9.23	6.30	6.50	15.0B
23	59.0B	28.8B	32.9	119	26.0	17.7	17.7	6.40	4.08	5.60	7.30B	15.3B
24	58.0B	28.5B	35.0	111	24.8	17.8	18.2	7.67	7.79	5.98	8.00B	16.0B
25	57.0B	28.0B	37.9	105	23.1	17.3	18.5	8.69	5.15	5.85	8.70B	16.4B
26	56.0B	27.8B	44.7	98.2	20.8	17.1	18.1	8.01	5.53	5.51	8.80	16.8B
27	55.0B	27.6B	52.9	90.0	20.3	16.7	17.4	7.95	5.21	6.83	9.88	17.5
28	54.0B	27.4B	55.6	87.0	20.7	14.7	16.7	7.94	6.92	5.91	9.61	19.1
29	52.0B		59.8	82.2	19.4	15.1	15.9	7.92	5.32	6.11	9.60B	19.8B
30	50.0B		63.1	76.7	19.5	14.0	15.6	6.19	10.2	5.43	9.60B	20.0B
31	47.0B		64.4		19.3		14.7	6.00		5.74		20.5B
Mean	66.7	34.6	33.2	82.6	36.5	23.6	13.6	8.01	7.35	6.77	6.49	13.6
Max	78.8	45.0	64.4	119	72.3	32.5	18.5	14.1	10.6	10.9	9.88	20.5
Min	47.0	27.4	22.8	62.3	19.3	14.0	10.1	5.63	4.08	5.43	4.23	9.00

Overall Mean      Maximum Daily      Minimum Daily  
27.7                      119 on Apr 23                      4.080 on Sep 23

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

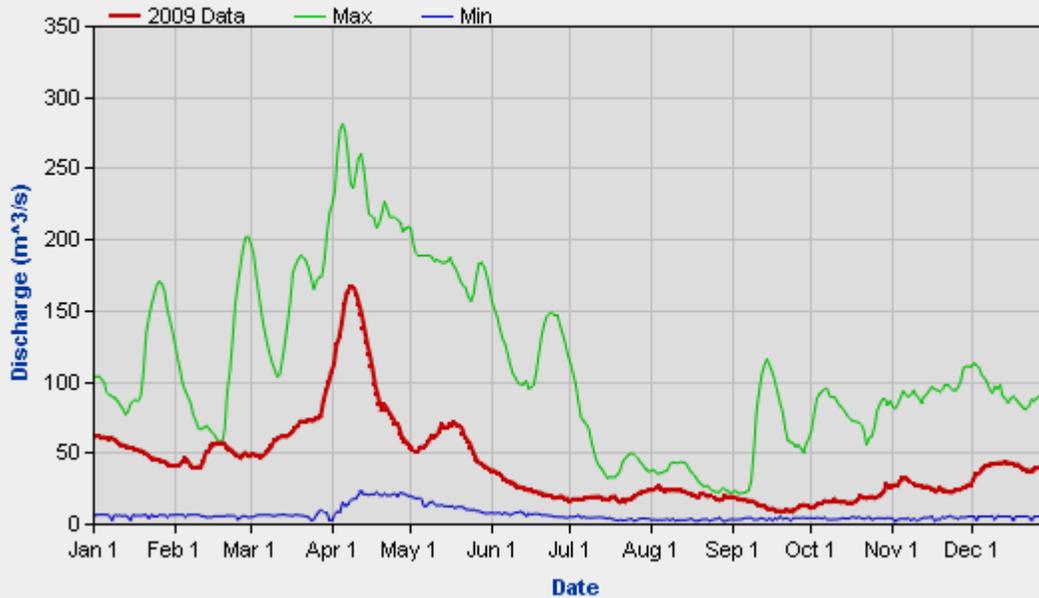
2008 Daily Discharge (m<sup>3</sup>/s)

2008	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	20.9B	64.0B	50.9B	54.3	145	27.2	50.4	29.3	20.1	17.8	21.7	24.5
2	19.5B	61.0B	50.0B	58.0	137	26.7	52.2	28.3	19.5	17.3	21.2	25.9
3	19.0B	56.9	50.3	60.6	132	24.4	53.9	27.9	19.2	17.2	20.7	26.5
4	19.4B	55.0	50.9	64.2	129	21.5	53.1	27.4	18.4	16.3	20.3	26.3
5	20.1B	54.4	51.6B	69.9	121	22.3	51.2	27.3	19.3	16.1	19.8	26.8
6	22.0B	53.4	53.3B	78.0	113	25.9	49.2	28.3	18.5	15.7	18.9	27.3
7	27.0B	53.3B	50.5B	90.4	106	27.2	47.0	27.9	19.3	16.3	18.2	27.1B
8	33.7	52.2B	52.8B	105	98.1	26.9	45.0	28.0	19.0	16.3	18.8	27.0B
9	48.5	51.6B	55.0B	118	89.9	27.1	42.0	28.4	18.9	17.5	18.8	27.5B
10	51.2	50.5B	56.8B	130	81.4	28.3	38.9	28.7	18.1	15.8	18.7	27.4B
11	54.3	49.7B	59.2B	141	78.2	27.2	37.3	29.0	18.2	15.2	17.5	27.0B
12	63.4	49.0B	58.6B	161	74.3	26.3	36.0	31.0	17.9	15.3	17.3	26.9B
13	70.5	48.2B	57.6B	174	72.3	26.7	34.7	29.6	17.6	15.1	17.8	26.5B
14	79.1	47.6B	56.2B	186	70.1	27.2	30.1	29.0	18.3	17.2	18.8	27.2B
15	84.4	47.2B	55.7	197	65.0	26.5	26.6	28.7	18.0	17.3	19.2	29.1
16	87.1	46.6B	54.7	206	60.4	26.5	26.2	28.5	18.0	16.6	20.9	30.3
17	87.4	46.0B	53.3B	211	52.1	27.0	25.6	27.6	18.3	15.2	20.8	32.3
18	86.3B	48.8	52.8B	210	49.9	29.0	26.1	28.3	17.8	14.5	20.4	34.3
19	83.0B	48.3B	53.4	208	49.0	32.3	28.4	27.9	18.1	14.4	21.5	35.4B
20	80.0B	50.3B	52.2B	206	45.8	36.0	28.4	27.7	18.2	14.3	21.7	36.1B
21	78.1B	51.4B	52.8B	204	42.6	37.2	29.6	27.4	16.8	13.4	21.6	36.7B
22	73.5B	52.2B	53.9B	203	39.8	38.6	30.7	26.6	17.0	14.0	21.1B	37.2B
23	72.2B	53.0B	55.6B	200	37.3	39.7	31.1	27.0	16.6	15.8	21.5B	37.8B
24	69.0B	53.9B	55.0B	196	35.1	40.2	33.0	25.8	16.5	16.2	20.5	38.2B
25	65.2B	53.2B	55.6B	191	34.8	41.9	35.1	22.8	17.1	17.2	21.1	39.9
26	61.0B	52.4B	55.7	184	33.3	43.0	35.5	22.6	17.5	18.5	22.1	40.4
27	58.6B	52.2B	55.1	178	29.9	47.9	34.8	22.2	16.6	21.0	22.0	42.2
28	56.2B	51.6B	54.3	167	29.2	48.7	33.7	21.7	15.8	22.8	22.3	49.7
29	54.6B	51.1B	53.3B	158	27.6	50.4	32.0	21.6	15.7	26.0	22.4	52.3
30	51.8B		51.6B	153	26.3	49.3	30.9	21.1	16.8	25.1	22.3	54.5
31	48.3B		52.2		27.0		30.2	20.2		24.6		58.0B
Mean	56.3	51.9	53.9	152	68.8	32.6	36.7	26.7	17.9	17.3	20.3	34.1
Max	87.4	64.0	59.2	211	145	50.4	53.9	31.0	20.1	26.0	22.4	58.0
Min	19.0	46.0	50.0	54.3	26.3	21.5	25.6	20.2	15.7	13.4	17.3	24.5

Overall Mean      Maximum Daily      Minimum Daily  
47.3                      211 on Apr 17                      13.400 on Oct 21

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

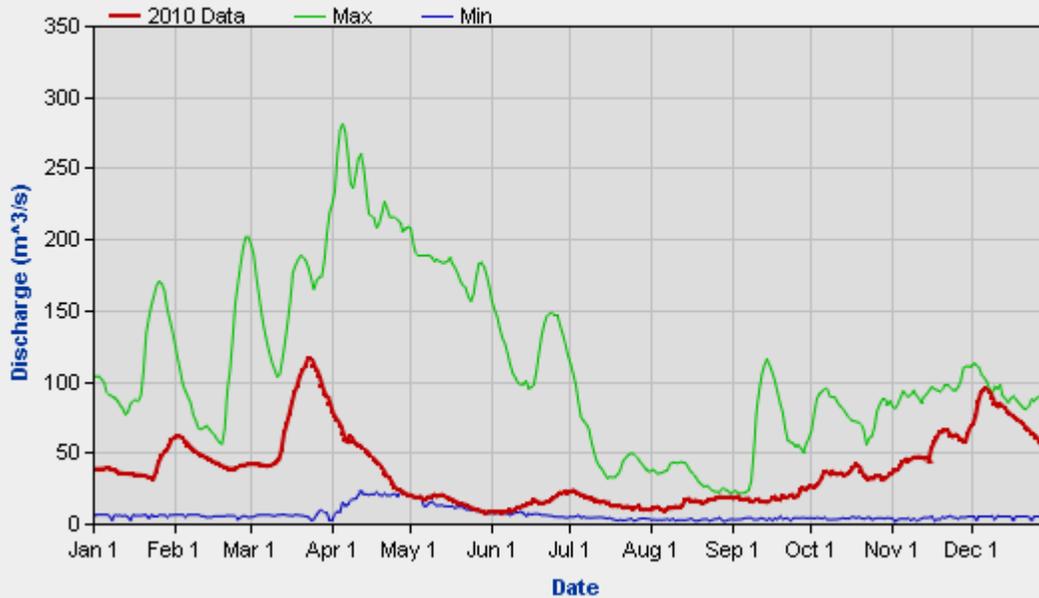
2009 Daily Discharge (m<sup>3</sup>/s)

2009	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	60.2B	40.5B	47.9	99.4	56.6	38.2	17.2	23.3	18.6	12.0	25.3	27.0
2	61.4B	40.8B	47.6B	107	53.1	37.1	15.6	23.7	18.5	11.2	26.3	26.8
3	61.7B	41.0B	48.6B	112	52.5	36.8	16.9	24.0	18.0	11.9	26.9	30.9
4	60.4B	44.0B	48.1	126	50.6	35.7	16.8	25.3	17.4	13.0	26.4	34.6
5	60.5	46.3B	47.2	131	51.1	34.8	17.1	26.3	16.8	13.9	29.7	34.7
6	59.7	43.2B	46.8	141	53.8	33.0	16.9	24.1	16.4	14.1	31.6	37.2
7	59.1	40.0B	47.9	154	53.4	30.9	17.2	22.7	16.3	15.7	31.8	38.7
8	59.9	39.4B	49.9	163	55.3	29.6	17.9	23.3	15.9	15.3	30.2	40.8
9	58.6B	39.2B	52.0	166	57.6	29.0	18.2	23.3	15.6	15.2	29.6	41.2
10	57.4B	39.6B	54.2	166	61.8	28.5	18.6	23.5	15.2	15.5	27.7	41.6B
11	55.6B	39.9B	58.2	161	60.7	27.3	18.5	23.3	14.2	17.0	26.8	42.0B
12	55.0	43.3B	58.8	154	61.6	25.9	18.7	23.2	13.1	15.5	26.6	42.3B
13	54.2	50.0B	60.7	147	64.8	25.3	18.7	23.2	12.2	15.0	26.0	42.4B
14	53.8B	51.1B	61.3	137	69.7	24.7	17.8	22.6	12.3	15.2	25.5	42.6B
15	53.1B	54.0	61.2	127	67.1	24.3	17.3	21.8	11.1	14.9	25.9	42.8B
16	52.8B	55.4	61.4	119	67.7	23.3	16.9	21.1	10.1	14.4	25.3	42.6B
17	52.0B	56.5	62.5	110	69.5	23.5	16.3	20.6	10.4	14.7	24.3	42.3B
18	51.5B	56.2	64.4	98.3	68.6	22.2	18.8	20.1	9.62	14.6	23.8	42.0B
19	51.1B	56.6	66.8	91.1	71.2	22.2	18.9	19.0	8.76	15.5	23.1	41.0B
20	50.0B	55.4	69.3	83.6	68.3	21.7	17.1	18.7	8.76	17.2	24.8	41.2B
21	49.1B	53.8	72.0	80.0	68.6	21.2	15.0	21.0	8.39	19.1	23.9	39.5B
22	47.8B	52.3	71.5	83.6	62.5	20.3	16.3	20.6	8.77	18.3	23.0	38.3B
23	45.9B	50.8	71.9	79.9	60.0	19.9	14.8	19.3	9.12	17.6	22.3	37.7B
24	45.5B	49.0B	72.5	77.1	57.5	19.6	17.1	19.2	9.01	18.5	21.9	37.1
25	45.0B	47.7	72.2	74.2	53.0	19.1	17.0	19.8	8.20	18.8	22.2	36.5
26	44.3B	46.3	72.4	70.1	48.7	17.9	18.0	17.8	9.39	17.8	23.3	37.3
27	43.9B	47.2	73.7	69.4	44.4	18.3	19.5	17.0	11.6	18.6	23.7	39.0
28	43.2B	49.6B	73.6	62.7	42.8	18.9	21.1	16.3	12.3	19.3	23.9	39.3
29	42.3B		75.5	60.2	42.1	18.6	21.7	17.0	13.0	20.7	25.1	39.3B
30	41.0B		86.7	56.8	40.6	17.4	22.4	19.6	12.5	22.5	25.6	38.8B
31	40.6B		93.5		39.4		22.7	18.4		28.4		38.3B
Mean	52.1	47.5	62.9	110	57.2	25.5	18.0	21.3	12.7	16.5	25.8	38.6
Max	61.7	56.6	93.5	166	71.2	38.2	22.7	26.3	18.6	28.4	31.8	42.8
Min	40.6	39.2	46.8	56.8	39.4	17.4	14.8	16.3	8.20	11.2	21.9	26.8

Overall Mean      Maximum Daily      Minimum Daily  
40.6                  166 on Apr 9                  8.200 on Sep 25

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



MISSISSIPPI RIVER AT APPLETON (02KF006)

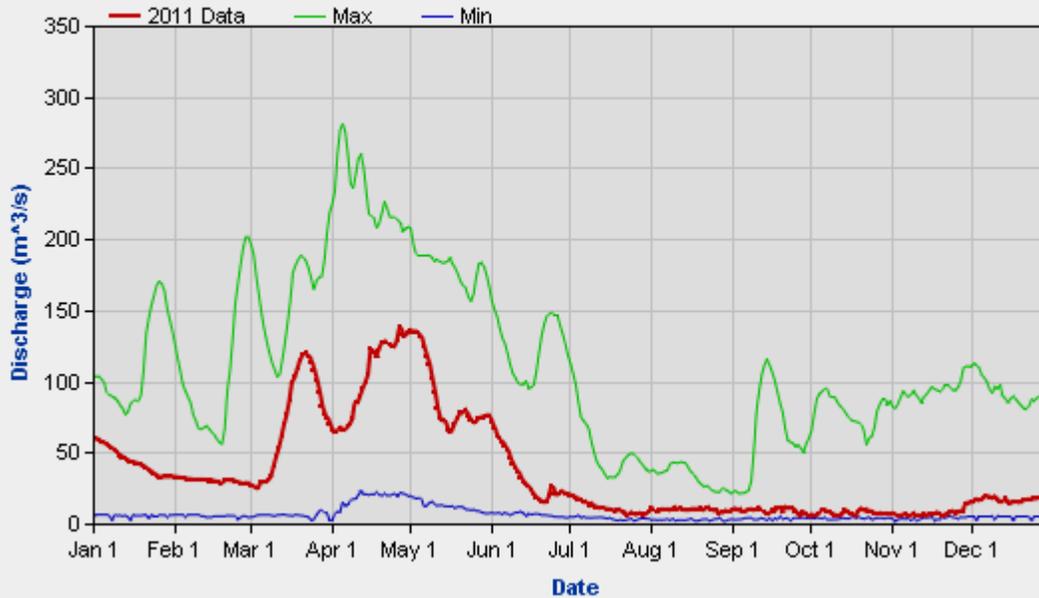
2010 Daily Discharge (m<sup>3</sup>/s)

2010	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	38.0B	60.8B	41.6	84.4	20.0	7.92	21.6	9.58	18.6	25.7	34.7	63.6
2	38.2B	61.1	41.7	78.1	19.9	8.10	22.4	9.84	17.6	26.0	35.7	69.2
3	38.2B	61.0	41.8	75.2	19.0	7.75	23.1	10.7	18.3	25.7	37.2	70.6
4	38.3B	59.8B	41.6	72.5	18.3	8.11	21.9	11.5	18.9	26.2	38.0	76.2
5	38.5B	57.9	41.5	69.3	18.5	7.87	21.2	11.2	17.4	28.7	40.1	86.1
6	38.8	55.0B	41.2	63.7	18.6	7.17	20.2	9.28	16.8	32.0	43.5	92.2B
7	38.8	53.7B	40.7	59.4	17.0	8.07	19.6	9.05	17.3	36.1	44.9	94.4B
8	37.9	52.0B	40.3	57.9	17.3	8.26	18.8	10.1	17.4	36.2	44.0	94.9B
9	37.2B	50.5	40.6	62.3	18.6	9.22	17.6	10.8	15.8	34.7	45.1	92.3B
10	36.6B	49.1	41.2	57.5	18.8	8.97	17.6	11.0	15.0	36.3	46.2	88.3B
11	35.3B	48.2B	42.2	56.4	20.1	9.90	16.9	11.8	16.9	35.2	46.4	83.6
12	35.2	47.0B	43.2	55.2	19.0	11.2	16.1	11.4	16.9	34.6	46.7	82.3
13	35.0	46.2	45.0	54.4	19.7	11.5	14.9	11.9	15.4	35.4	46.4	84.0
14	34.9	45.3	52.1	53.1	20.0	12.2	15.2	13.0	15.3	34.5	45.6	82.6B
15	34.7	44.2	64.0	51.0	19.1	12.8	15.3	16.6	15.0	34.1	46.6	80.8B
16	34.7	43.0	70.4	49.3	17.8	13.8	14.5	17.2	15.5	35.2	44.1	78.4B
17	34.1	42.4	77.5	48.1	17.5	14.6	14.7	16.1	17.6	36.6	52.7	76.4B
18	34.0	41.4	85.4	44.9	16.5	16.7	12.2	15.6	18.9	39.0	57.0	75.2
19	33.9	40.4	92.8	43.2	15.6	15.7	12.5	15.9	17.5	42.4	60.2	73.7
20	33.6	39.6	97.3	41.7	14.6	14.6	12.2	15.1	16.6	40.5	64.3	72.5
21	33.2B	39.0	104	39.9	13.7	14.2	12.4	15.1	19.0	36.4	64.4	71.2B
22	32.5B	38.3	108	35.4	13.5	14.6	11.4	14.5	18.8	33.7	65.4	69.7
23	31.8B	38.4	111	33.1	13.0	15.1	11.6	15.5	17.7	32.7	65.4	67.4B
24	31.3B	38.4	116	31.6	12.0	15.8	11.7	16.5	20.2	31.5	61.8	65.3B
25	36.4	38.9	116	27.8	11.1	16.9	10.8	17.0	19.9	31.6	61.1	63.5B
26	43.0	40.9	111	25.7	10.3	18.4	10.5	17.1	18.7	31.6	62.2	62.9B
27	47.0	40.9	108	23.5	9.53	19.6	11.2	18.0	19.2	33.5	61.2	60.2B
28	50.4B	41.1	103	23.5	9.33	21.4	12.3	18.7	23.3	33.2	59.1	57.4B
29	51.2B		96.6	22.3	8.55	21.4	10.3	18.4	24.7	30.7	57.9	55.9
30	54.9B		91.7	21.1	8.03	22.4	9.58	18.3	23.9	31.8	57.5	58.0
31	59.5		89.8		7.70		9.92	18.3		32.9		57.9
Mean	38.6	46.9	72.2	48.7	15.6	13.1	15.2	14.0	18.1	33.4	51.2	74.4
Max	59.5	61.1	116	84.4	20.1	22.4	23.1	18.7	24.7	42.4	65.4	94.9
Min	31.3	38.3	40.3	21.1	7.70	7.17	9.58	9.05	15.0	25.7	34.7	55.9

Overall Mean      Maximum Daily      Minimum Daily  
36.7                      116 on Mar 24                      7.170 on Jun 6

B - Ice Conditions

### Daily Discharge for MISSISSIPPI RIVER AT APPLETON (02KF006)



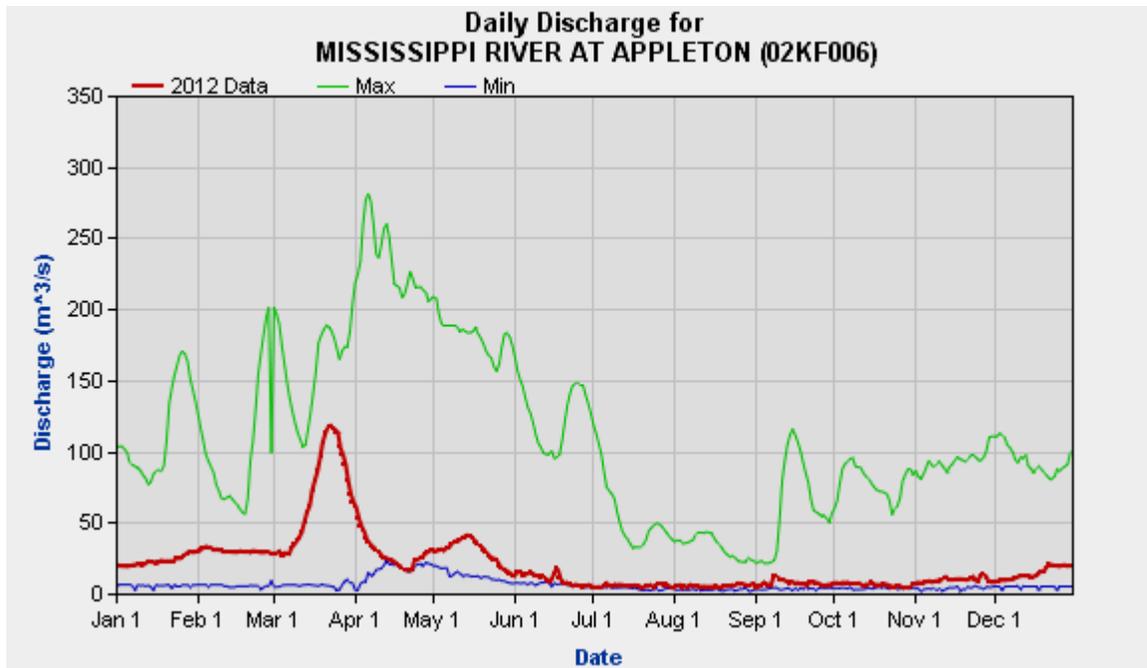
MISSISSIPPI RIVER AT APPLETON (02KF006)

2011 Daily Discharge (m<sup>3</sup>/s)

2011	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	58.5	32.8B	28.3	70.4	134	76.1	20.8	8.29	8.77	5.10	6.48	14.6
2	59.7	32.5B	27.1	65.6	136	70.8	20.2	11.0	10.0	6.22	7.14	14.9
3	59.0B	32.3B	26.1B	64.7	135	66.8	19.2	10.3	10.4	5.72	6.35	15.9
4	57.5	32.0B	25.1	65.0	135	61.0	18.5	8.42	9.39	6.16	5.45	17.0
5	56.8	31.7B	25.7	67.9	134	59.7	17.5	9.13	10.4	6.87	5.73	16.4
6	55.5B	31.3	29.1	66.4	131	57.6	16.5	10.0	8.55	10.0	6.26	17.1
7	54.1	31.2	29.3B	65.7	124	54.6	15.3	9.87	9.02	9.34	6.54	18.3
8	53.0	30.9B	29.7	68.0	118	51.5	15.0	9.96	9.77	8.68	5.46	19.4
9	52.0B	30.9B	30.9B	70.2	112	45.9	13.3	9.50	10.1	7.96	5.83	18.8
10	50.2B	30.9B	33.4B	73.6	102	42.0	14.1	10.5	9.54	6.64	7.08	17.9
11	48.3B	30.9B	41.0	86.1	92.9	38.7	12.8	11.4	9.95	6.06	5.57	18.9
12	46.9B	30.9B	47.5	85.1	81.7	36.5	11.6	10.1	11.1	5.66	5.79	17.3
13	45.8B	30.8	53.6	90.1	74.6	32.6	11.0	10.8	10.0	5.92	5.59	15.6
14	44.6B	30.1	61.6	95.3	72.2	29.9	11.2	9.83	7.86	6.74	6.61	15.1
15	43.7B	30.6	70.2	99.8	72.2	28.0	10.7	9.51	6.97	9.29	6.01	17.6
16	43.2B	29.9	77.0	105	66.5	26.0	10.2	9.54	7.52	8.35	6.42	15.5
17	42.7B	29.5	86.9	123	63.9	23.2	9.91	10.1	9.16	6.80	6.41	14.3
18	42.1B	29.3	99.9	121	65.9	20.5	9.54	10.2	8.72	6.40	6.90	15.1
19	41.4B	28.2B	103	118	70.2	18.8	8.85	10.2	10.8	5.24	7.63	15.4
20	40.5B	30.2B	109	122	74.2	17.2	9.40	10.3	11.2	8.74	6.56	14.9
21	39.4B	30.8B	115	127	77.8	15.8	9.30	10.9	8.26	10.5	5.57	15.1
22	38.0B	30.5B	119	128	78.1	15.1	7.86	9.80	11.8	9.27	6.30	16.3
23	36.7B	30.4	120	128	79.8	15.4	7.51	10.9	10.8	9.92	6.45	16.8
24	35.4B	29.9	118	126	75.9	19.4	6.07	11.8	10.9	8.81	8.06	17.0
25	34.1B	29.2	114	125	72.7	27.1	7.58	9.63	11.3	8.49	8.55	17.0
26	32.9B	28.6	108	124	71.3	20.5	6.98	9.18	8.43	7.30	7.58	17.6
27	32.8B	28.1	101	129	71.4	20.4	6.35	9.28	6.59	6.67	7.92	17.7
28	33.0	28.4	92.5	138	74.1	21.3	7.16	7.57	5.52	7.21	8.75	18.4B
29	33.0		82.9	133	74.8	22.5	6.63	7.74	7.89	6.85	8.58	18.4B
30	33.1B		77.2	132	74.6	21.2	5.98	9.03	6.82	6.86	14.5	18.4
31	33.0B		74.8		76.0		6.34	8.58		6.93		18.4
Mean	44.4	30.5	69.6	100	91.0	35.2	11.4	9.79	9.25	7.44	6.94	16.8
Max	59.7	32.8	120	138	136	76.1	20.8	11.8	11.8	10.5	14.5	19.4
Min	32.8	28.1	25.1	64.7	63.9	15.1	5.98	7.57	5.52	5.10	5.45	14.3

Overall Mean      Maximum Daily      Minimum Daily  
36.1                      138 on Apr 2      8                      5.100 on Oct 1

B - Ice Conditions



MISSISSIPPI RIVER AT APPLETON (02KF006)

2012 Daily Discharge (m<sup>3</sup>/s)

2012	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	18.8	30.0	28.2	61.3	30.3	12.0	4.50	4.04	4.22	7.36	7.07	8.05
2	19.7	30.3	28.3	53.9	29.8	15.3	4.31	5.67	5.48	7.32	7.69	8.61
3	19.3B	31.8	29.4	48.3	30.5	15.1	4.46	5.82	6.03	6.80	7.38	8.63
4	19.3B	32.8	26.9	44.6	31.0	12.7	4.42	3.99	7.70	7.51	7.64	9.38
5	19.1	32.3	28.3B	39.2	30.3	13.7	5.20	5.15	6.40	7.46	8.16	9.26
6	19.4	32.0	28.1	36.4	32.0	14.1	6.96	4.30	6.09	7.66	8.66	9.56
7	19.9	30.9	27.7	34.3	32.2	14.8	5.90	5.92	5.48	7.01	7.98	9.81
8	20.1	31.0	32.4	32.3	34.8	13.7	5.04	4.97	12.1	6.95	8.36	10.3
9	20.5	30.6	34.6	31.2	37.0	12.7	6.27	4.93	12.8	6.89	8.86	10.7
10	20.5	30.2	37.2	29.3	36.6	12.1	5.91	5.50	9.57	7.05	8.39	11.7
11	20.3	29.4B	39.9	26.4	37.6	11.6	6.13	4.62	9.73	6.54	9.27	12.3
12	21.0	29.4B	43.6	25.3	39.1	12.0	5.88	4.80	9.15	5.26	11.9	12.5
13	22.3	29.4	51.1	24.8	39.7	9.29	5.54	4.63	8.14	6.22	11.5	12.4
14	22.3B	29.2	57.8	23.9	40.8	9.07	5.40	4.62	7.31	6.26	9.57	12.4
15	22.0B	29.1	62.0	23.2	40.2	8.88	5.27	4.67	8.08	8.69	9.59	11.9
16	21.7	29.1	73.3	22.4	39.0	13.4	5.29	4.78	7.21	6.42	10.0	11.8
17	21.8	29.7	80.0	21.0	36.3	17.7	5.73	5.00	7.45	5.99	9.98	12.5
18	23.0	29.4	86.6	19.1	35.3	11.3	5.28	4.40	6.65	6.02	10.1	14.0
19	22.6	29.3	96.3	18.9	33.3	8.06	4.72	4.35	6.53	5.74	9.96	15.4
20	22.7	29.4	107	16.6	31.4	7.31	4.00	5.06	6.90	6.77	9.66	15.4
21	22.6	28.8	113	16.2	29.7	7.41	5.17	5.44	6.16	6.25	9.74	18.4
22	22.7	29.8	118	16.2	26.3	6.36	5.12	5.41	7.92	5.37	10.6	20.6
23	23.0	29.6	118	17.0	25.3	5.50	5.71	5.82	7.88	4.90	11.7	20.0
24	24.7	29.2B	116	23.9	24.4	6.08	4.32	5.60	7.61	4.63	10.0	19.6
25	24.7	28.9B	114	23.9	23.6	5.80	6.12	6.73	6.97	5.07	9.08	19.4
26	25.5	28.9B	103	25.2	19.0	5.25	6.98	6.49	6.08	5.30	12.5	19.2
27	27.3	29.2B	98.1	25.6	17.8	4.62	6.76	6.68	5.27	4.04	14.4	19.7
28	28.6	29.0	91.3	28.7	16.7	5.31	5.59	6.06	5.85	4.27	10.7	19.9B
29	29.3	28.1	79.5	29.2	15.8	5.92	6.39	5.57	6.24	4.10	8.52	19.3
30	29.0		70.2	30.4	14.6	5.49	4.95	6.26	5.85	4.51	7.91	19.5B
31	29.3		65.0		13.2		4.28	6.59		6.77		19.2
Mean	22.7	29.9	67.3	29.0	29.8	10.1	5.41	5.29	7.30	6.17	9.56	14.2
Max	29.3	32.8	118	61.3	40.8	17.7	6.98	6.73	12.8	8.69	14.4	20.6
Min	18.8	28.1	26.9	16.2	13.2	4.62	4.00	3.99	4.22	4.04	7.07	8.05

Overall Mean 19.7      Maximum Daily 118 on Mar 22      Minimum Daily 3.990 on Aug 4

B - Ice Conditions

## **Average Monthly Flow Data**

On the pages that follow, Monthly Mean Discharge (m<sup>3</sup>/s) at the Appleton Stream Gauge for the entire recorded period is tabulated as downloaded from the Environment Canada website.

From that data, the average monthly mean, maximum and minimum values were then computed for three different groups of years as follows:

- 1920 to 1990 - Flour Mill Era
- 2000 to 2012 - Generator Station Era
- 1919 to 2012 - Full data record

Since there is some doubt as to exactly when operations evolved from Flour Mill to Generator Station, the first two sampling periods have not included the transition years from 1991 to 1999.

The resulting data was then used to generate bar charts for Mean, Maximum and Minimum Flows showing the computed values for the three periods.

**MISSISSIPPI RIVER AT APPLETON (02KF006)**Station: 02KF006 Report Type: Monthly  
Monthly Mean Discharge (m<sup>3</sup>/s)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1918	-	-	-	-	-	-	-	-	-	20.3	30.2	37.9	-
1919	40.6	26.3	52.4	119	120	84.6	19.6	12.7	12.9	13.6	23.9	16.6	45.1
1920	15.7	15.8	35.9	70.3	41.2	20.9	14.4	11.8	10.7	10.1	10.6	13.4	22.5
1921	14.5	8.57	72.3	83.6	52.7	17	9.78	12	11.3	11.2	11.9	12.6	26.6
1922	11.9	11.2	30.5	108	69.8	31.3	19.7	12.1	8.43	9.74	8.37	7.11	27.3
1923	10.5	9.94	8.57	43.2	55.1	57.4	17.5	8.91	8.9	7.64	6.91	10.9	20.4
1924	15.9	22.1	37.5	102	90.7	28.4	12.4	10.5	9.51	10	8.42	7.9	29.6
1925	9.28	11.9	43	82.2	40.7	22.6	17.7	14.7	12.2	14.6	43.2	49.7	30.2
1926	28.9	30	25.8	84.3	124	42.5	19.8	12.2	11.6	10.4	21.6	26.2	36.5
1927	21	32.3	74.3	72.6	57.1	47.9	28.8	23.3	16.4	10.3	29.2	76.2	40.9
1928	45.6	30.9	43.9	181	94.4	33	20.1	22	15.2	38.9	90.4	63.2	56.5
1929	48.5	40.2	89.7	155	118	45.8	14.2	8.21	9.12	8.34	8.27	7.65	46
1930	15	22.7	36.7	57.7	45	27.8	15.4	7.35	7.88	9.97	7.96	5.61	21.5
1931	7.62	9.97	9.81	61.3	32.3	19.4	9.86	10.9	8.36	10.2	7.8	18.8	17.2
1932	47.9	51.3	34.5	118	80.3	21.2	8.01	7.28	7.29	9.12	17.8	22.5	35.3
1933	30.9	33.4	21.7	135	81.2	22.8	9.77	7.5	7.93	7.9	7.17	7.67	30.9
1934	8.1	9.77	11.6	119	60.9	20.5	9.5	7.65	8.19	8.79	8.4	9.03	23.4
1935	11.9	14.7	31.3	62.5	37.5	28	22.3	11	8.95	8.77	9.88	21.5	22.4
1936	22.2	17.8	67.4	167	86.4	21.7	12.1	9.05	8.85	8.56	17.3	12.7	37.5
1937	54.7	51.8	31.3	80.2	103	43.3	12.8	8.4	8.03	7.48	35.8	37.9	39.5
1938	24.2	28.6	54.9	105	56.4	17	9.27	8.76	8.01	7.21	6.66	6.07	27.6
1939	6.8	12.1	12.2	70	103	20.3	9.93	10.4	9.94	9.15	10.6	11.8	23.9
1940	10.3	10.2	11.4	83.1	84.9	79.8	14.5	12.8	13	10.2	9.32	10.4	29.1
1941	29.2	27.6	26.9	76.5	20.6	9.71	9.41	9.31	7.92	6.43	9.71	16.6	20.7
1942	25.9	21.1	53.1	111	51.5	24	11.3	8.23	8.68	8.84	28.9	31.7	32
1943	28.3	30.6	48.8	121	176	84.3	19.2	12.4	11.2	11.1	18.6	17.9	48.3
1944	12.3	11	10.4	35.3	55.1	23.4	11	9.85	10.3	9.28	9.47	10.4	17.3
1945	10.1	9.12	38.7	75.4	86.1	62.5	27.8	14.2	10.6	26.8	29.7	27.6	35
1946	30.6	23.1	69.1	49.7	19.9	14.7	9.38	9.39	9.07	8.28	13.9	21.9	23.3
1947	28.3	41.3	53.6	158	111	80.5	37.6	15.3	11.2	12	14.8	15.6	48.1
1948	12.5	15.4	48.4	103	52.9	46.5	16.3	12.3	12.6	12.2	10.6	12.4	29.5
1949	16.3	20.7	33.3	114	60	14	10.4	9.87	9.71	11.4	8.98	13.2	26.8
1950	43.5	51.4	44.8	125	66	23.8	8.07	7.99	8.18	8.19	12.6	22.1	34.9
1951	30	37.6	60.4	166	81.6	16.1	13.1	9.8	8.81	9.15	21	32.5	40.4
1952	37.9	40.2	48.3	127	58	32.5	11.4	10.7	9.88	9.72	9.8	15.8	34.1
1953	15.9	18.2	41.6	65.2	55.9	21.2	14.1	11.1	8.6	10.5	14	19.5	24.7
1954	21.5	21.2	40.3	118	78.4	29.3	14.1	11	15.3	26.4	41.5	44.8	38.5
1955	35.1	27.4	43.6	136	59.7	18.7	8.54	6.39	6.11	17.2	50.5	21.9	35.8
1956	18	14.5	15.2	84.9	107	63.4	12.4	9.65	9.79	11.6	11.7	13.3	30.9
1957	13.4	15.7	23.6	38.7	23.9	13.4	10.4	7.85	7.3	7.21	8.24	12.7	15.2

**MISSISSIPPI RIVER AT APPLETON (02KF006)**

Station: 02KF006 Report Type: Monthly

Monthly Mean Discharge (m<sup>3</sup>/s)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1958	21	20.6	28.4	80.8	39.3	16.4	9.95	7.95	7.57	8.69	10	12.6	21.9
1959	11.7	13.3	19.2	92.7	39.4	13.7	10.3	8.41	8.49	6.05	13.6	25.9	21.9
1960	25.9	29.5	33.9	149	80.4	16	8.21	7.06	6.92	6.4	6.74	6.45	31.2
1961	6.68	6.05	7.78	47.6	34.4	28.6	11.4	8.52	8.68	8.57	7.73	7.51	15.3
1962	7.21	7	8.73	59.8	23.9	8.18	6.08	5.03	5.55	6.19	11.4	16.4	13.8
1963	20.9	17.7	18.7	67.5	32.8	15	7.06	6.41	7.4	8.2	11.2	29.4	20.2
1964	24.6	27.4	46.7	51.1	31.6	13.5	6.23	5.43	6.41	6.15	5.95	6.49	19.3
1965	10.2	11.8	21.4	65	43.1	11.2	6.2	6.73	8.05	10.2	24.2	49.6	22.4
1966	42.4	33	55.5	47.3	29.1	26.6	10.6	7.41	7.62	6.65	11.3	48.4	27.2
1967	43	29	27.2	80.1	36	22.4	33.8	18.3	17.5	34.2	68.3	58.7	39
1968	37.6	34.9	50	84	19.6	15.8	21.3	11.1	16.5	16.1	16.7	26.1	29.1
1969	23.1	29.2	39.7	120	137	58.8	23.2	17.6	11.5	7.44	13	19.4	41.7
1970	16	19.2	27.6	101	73.5	26.6	10.7	6.66	7.2	9.54	19.9	32.6	29.2
1971	23.8	23.1	39.5	129	112	14.8	5.6	4.98	7.79	9.15	9.1	22.5	33.4
1972	28	29.5	31.9	103	121	30.5	31.3	25.1	10.8	12.4	33.7	43.3	41.7
1973	46.3	50.6	116	129	54.5	17	8.58	10.6	14.1	12.2	17.1	21.4	41.3
1974	26	32.2	62.1	117	115	33.3	12.9	10.5	9.4	7.26	14.6	25.4	38.8
1975	27.6	22.9	38.1	97.7	78.2	18.3	6.5	5.85	7.92	7.8	10.6	19.9	28.4
1976	20.2	24.4	65.4	159	53	29.8	13.1	9.76	9.6	14	18.4	21.9	36.4
1977	14.5	12.7	65.3	71.5	27.4	10.4	7.56	7.73	8.21	11.1	16	33.2	23.9
1978	45	54.3	38.2	126	77.9	13.6	5.66	6.24	6.69	7.71	11	16	33.8
1979	19.4	18	61.3	125	58.2	30.4	8.42	7.93	8.35	14.1	23.9	45.5	35.1
1980	48.5	23.4	55.1	81.9	79.2	16.6	16.1	13.7	13.2	12.5	28.8	32.9	35.2
1981	25.1	65.5	100	33.1	26.6	33.6	18.2	13	60	42.8	63.9	40.5	43.3
1982	30.4	23.8	25.9	103	55	28.6	11.4	8.72	10.4	11.2	22	45.9	31.3
1983	66.5	47	54.3	68.1	101	26.1	7.07	6.36	5.94	6.18	21	39.9	37.5
1984	27.6	48.8	64.9	159	97.4	27.8	7.89	7.89	5.98	7.46	10.8	15.5	39.9
1985	17.5	17.8	57.4	88	42.4	14.5	8.2	6.19	11.9	6.27	17.9	24.1	26
1986	24.6	21.5	32.2	56.1	30.5	24.7	18.3	19	32.8	74.3	47.3	45.2	35.6
1987	32	24.1	37.1	117	29.3	18.2	12.5	7.36	7.72	12.6	18.7	50.4	30.6
1988	34.1	34.3	35.6	84.4	42.8	15.9	6.07	5.16	6.37	10.4	22.5	22	26.5
1989	18.6	14.9	20.4	56.2	42	25.1	11.9	6.87	7.01	7.77	19.1	24.1	21.1
1990	24.5	32.6	73.5	61.3	57.2	21.6	9.25	7.22	6.77	13.6	18	29	29.5
1991	49.1	34.8	55.6	134	65.1	11.1	6.13	6.95	6.2	6.89	7.62	11.4	32.8
1992	14.6	18.1	25.2	99.6	65.5	15	7.96	9.84	13.7	13.6	40.8	63	32.2
1993	54.3	43.4	33.3	142	59.9	29.2	22.3	11.1	9.04	15.9	23.1	43.1	40.4
1994	25.5	22.8	25.6	79.3	39	33.9	20.8	23.7	16.2	14.7	13.5	20.9	27.9
1995	77.2	66.5	58.6	24.6	19.8	23.1	7.26	8.85	6.66	13.9	37.1	52.3	32.8
1996	49.8	74.1	68.2	100	99.4	26.4	8.75	11.1	15.2	22.4	31.8	57.6	47
1997	60.7	44.4	74.6	133	82	18	11.3	6.56	9.12	10.2	30.6	26.2	42.2

**MISSISSIPPI RIVER AT APPLETON (02KF006)**

Station: 02KF006 Report Type: Monthly

Monthly Mean Discharge (m<sup>3</sup>/s)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1998	30.1	26.9	63.1	147	20.9	11.6	10.6	8.6	9.8	5.08	8.95	12.4	29.5
1999	15.8	34	36.1	117	18.7	8.61	4.7	3.47	4.98	6.07	14.9	32.9	24.5
2000	27	18.2	37.6	58.5	66.7	38.7	49.9	33	16.3	14.4	10	26.9	33.2
2001	35.1	34.9	38	80.1	18.7	12.6	5.71	3.82	5.98	7.68	9.67	38.1	24.1
2002	34.9	27.3	51.1	83.7	73.8	83.6	44.9	8.3	5.14	4.84	6.63	7.82	36
2003	10.4	11.8	24.6	46.7	30.2	27.9	9.73	11.2	8.28	20.1	58.7	94.3	29.6
2004	79.1	36	51.3	71.9	45.6	29.9	9.11	14.3	36.3	19.4	21.2	48.2	38.5
2005	61.3	36.3	21.9	114	51	41.9	21.9	7.06	7.65	9.75	18.1	32.9	35.2
2006	39.7	58.4	66.3	80.7	44.5	38.2	25.3	11	10.1	28.6	66.6	86.8	46.2
2007	66.7	34.6	33.2	82.6	36.5	23.6	13.6	8.01	7.35	6.77	6.49	13.6	27.7
2008	56.3	51.9	53.9	152	68.8	32.6	36.7	26.7	17.9	17.3	20.3	34.1	47.3
2009	52.1	47.5	62.9	110	57.2	25.5	18	21.3	12.7	16.5	25.8	38.6	40.6
2010	38.6	46.9	72.2	48.7	15.6	13.1	15.2	14	18.1	33.4	51.2	74.4	36.7
2011	44.4	30.5	69.6	100	91	35.2	11.4	9.79	9.25	7.44	6.94	16.8	36.1
2012	22.7	29.9	67.3	29	29.8	10.1	5.41	5.29	7.3	6.17	9.56	14.2	19.7

**For 1920-1990 – Flour Mill Era**

Average values over the period for Monthly Mean, Max and Min

Mean	24.8	25.4	41.5	95.2	64.8	27.7	13.3	10.1	10.5	12.3	19.1	24.6	30.7
Max	66.5	65.5	116	181	176	84.3	37.6	25.1	60	74.3	90.4	76.2	56.5
Min	6.68	6.05	7.78	33.1	19.6	8.18	5.6	4.98	5.55	6.05	5.95	5.61	13.8

**For 2000-2012 – Generator Station Era**

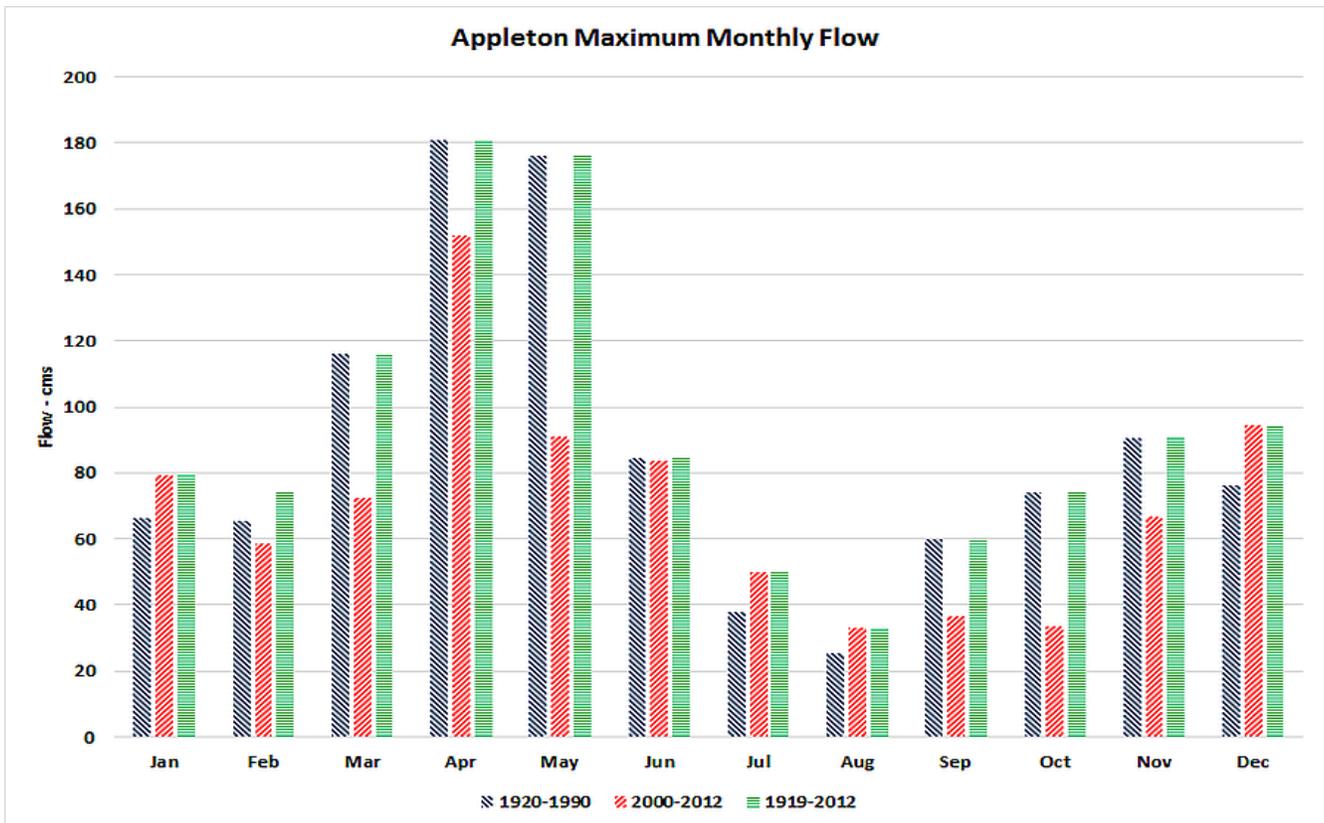
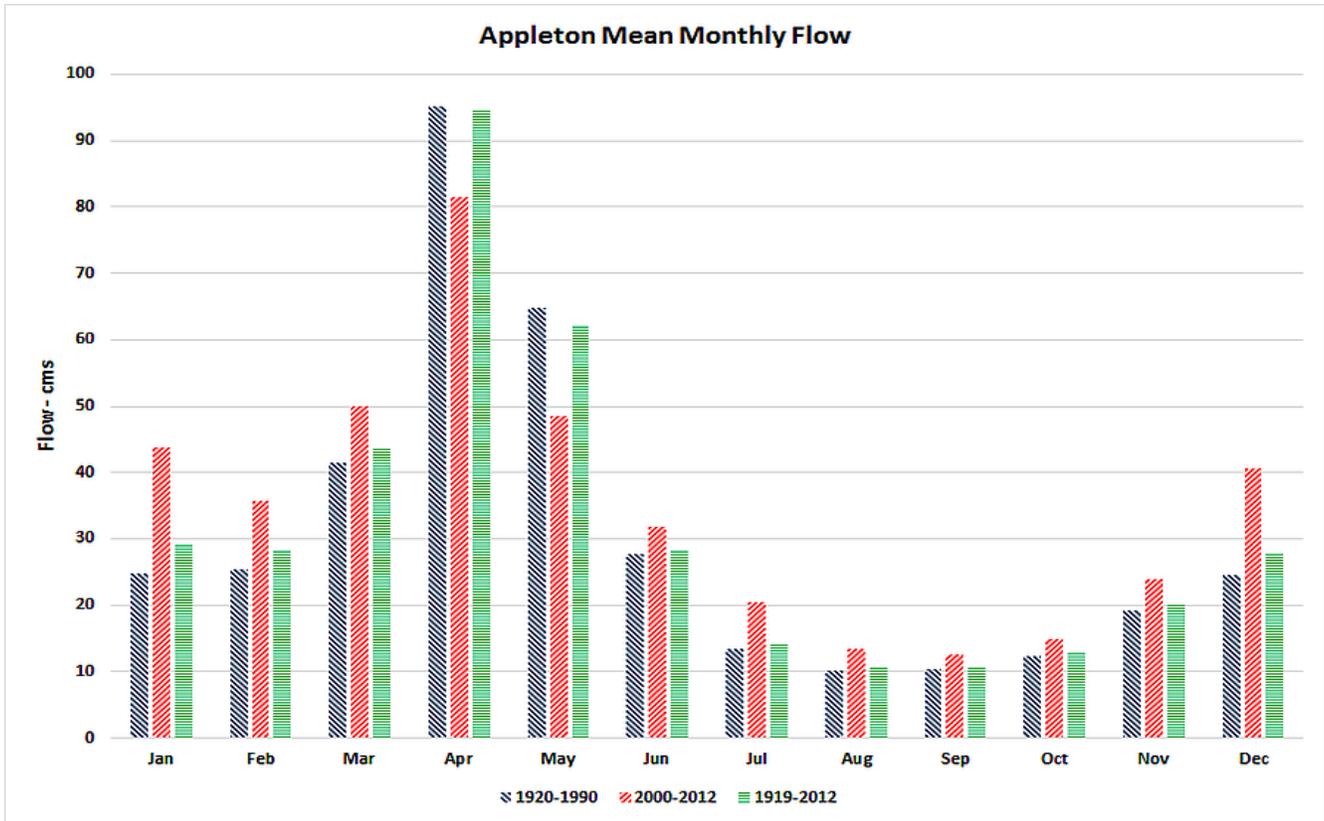
Average values over the period for Monthly Mean, Max and Min

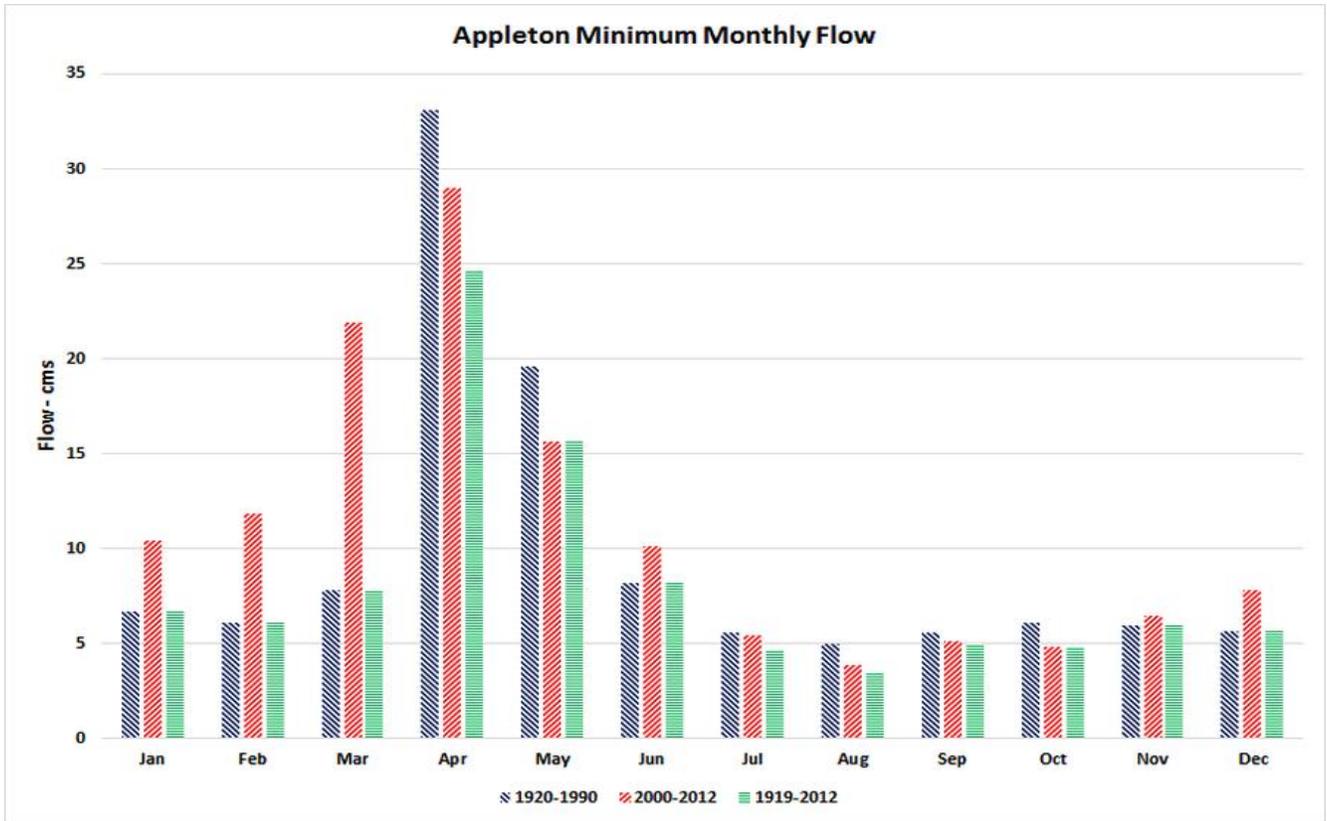
Mean	43.7	35.7	50	81.4	48.4	31.8	20.5	13.4	12.5	14.8	23.9	40.5	34.7
Max	79.1	58.4	72.2	152	91	83.6	49.9	33	36.3	33.4	66.6	94.3	47.3
Min	10.4	11.8	21.9	29	15.6	10.1	5.41	3.82	5.14	4.84	6.49	7.82	19.7

**For 1919-2012 – Complete Period**

Average values over the period for Monthly Mean, Max and Min

Mean	29.2	28.3	43.5	94.8	61.9	28.1	14.2	10.6	10.8	12.7	20.3	27.9	31.8
Max	79.1	74.1	116	181	176	84.6	49.9	33	60	74.3	90.4	94.3	56.5
Min	6.68	6.05	7.78	24.6	15.6	8.18	4.7	3.47	4.98	4.84	5.95	5.61	13.8

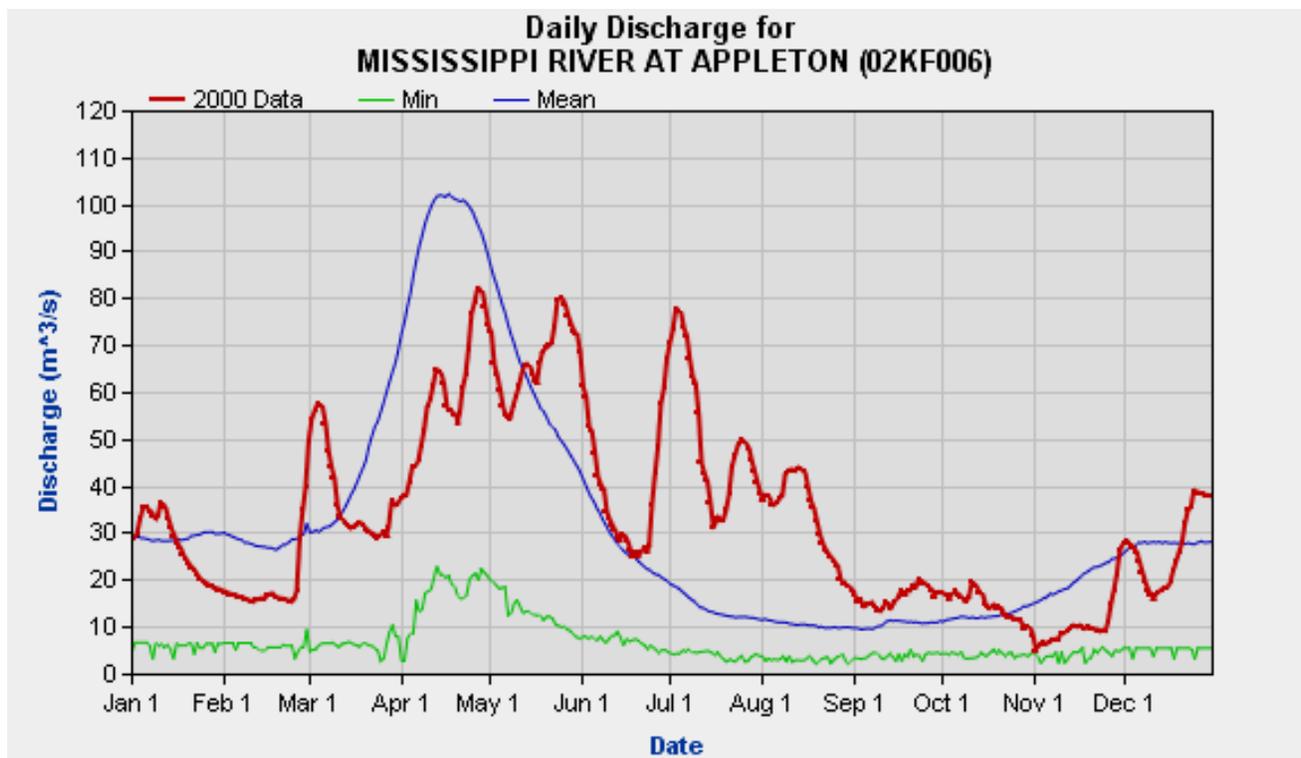




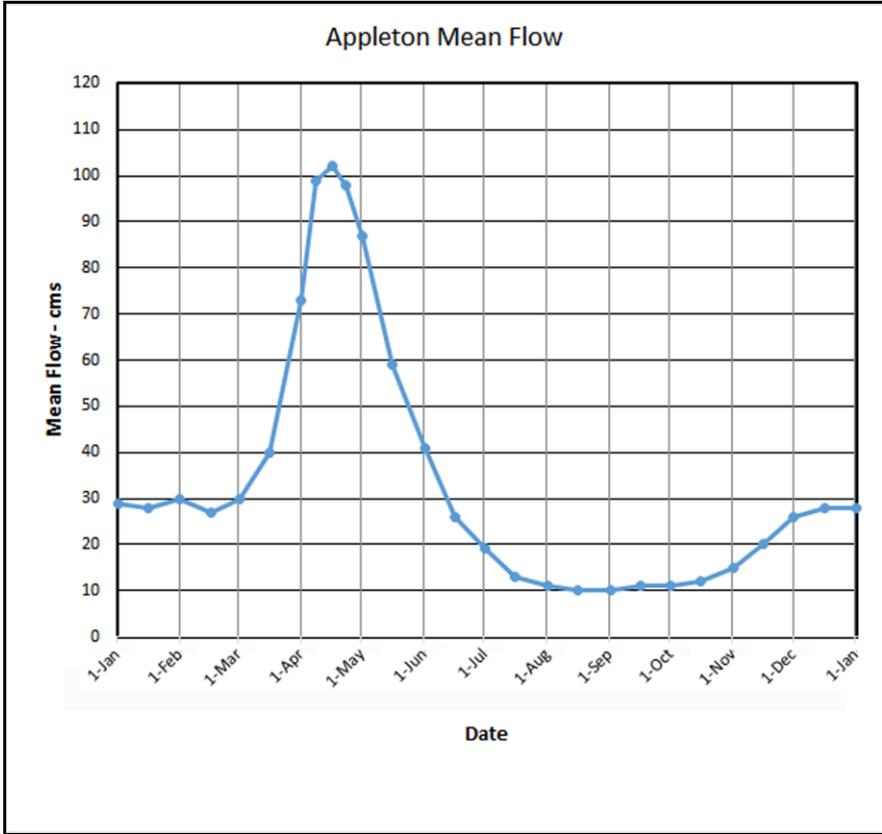
## Mean Daily Flow

A useful piece of flow information is the mean daily flow averaged over the full 95 years of the Appleton Stream Gauge records. This is very easy to get in graphical form as an option on the Daily Discharge plots from the Environment Canada website, but not so readily available as a digital record. Since there was a need for the digital mean daily flow for the work in Appendix P, the quick answer was to do some manual scaling of the graphical data to construct the essential details of a digital record.

As a starting point, the graphical data for 2000 was downloaded with Min and Mean checked as options. That year was selected since it did not have the usual high spring flood, but peaked out at approximately 82 cms. The graph scaling is automatically set to display the largest data item at near full scale, which in this year is the Mean data. This makes the plot for the Mean data easier to read manually and create the table on the next page for Appleton Mean Flow by Date.



As a test, the manually scaled data was entered into a spread sheet and used to generate the plot below for Appleton Mean Flow for the entire 95 year period of the Appleton records. The essential thing is that the manually scaled data set does produce a chart that is a close approximation to the Appleton mean discharge curve on the previous chart.



Appleton Mean Flow by Date	
Date	Mean Flow
1-Jan	29
16-Jan	28
1-Feb	30
16-Feb	27
1-Mar	30
16-Mar	40
1-Apr	73
8-Apr	99
16-Apr	102
23-Apr	98
1-May	87
16-May	59
1-Jun	41
16-Jun	26
1-Jul	19
16-Jul	13
1-Aug	11
16-Aug	10
1-Sep	10
16-Sep	11
1-Oct	11
16-Oct	12
1-Nov	15
16-Nov	20
1-Dec	26
16-Dec	28
01-Jan	28