

Water-Data Report 2011

14220500 LEWIS RIVER AT ARIEL, WA

Lower Columbia Basin
Lewis Subbasin

LOCATION.--Lat 45°57'07", long 122°33'46" referenced to North American Datum of 1927, in NW ¼ NE ¼ sec.4, T.5 N., R.2 E., Cowlitz County, WA, Hydrologic Unit 17080002, on right bank 0.4 mi southeast of Ariel, 0.5 mi downstream from Merwin Dam and powerplant, 3.3 mi upstream from Cedar Creek, and at mile 19.0.

DRAINAGE AREA.--731 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" water years 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi downstream; low discharges not equivalent due to local inflow.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30(M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft above NGVD of 1929 (levels by Pacificorp). July to November 1909, nonrecording gage at site 4 mi upstream at different datum. July 27 to Oct. 29, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi downstream at datums 3.90 ft and 0.90 ft higher respectively, than present datum.

REMARKS.--No estimated daily discharges. Records good. No diversion upstream from station. Flow regulated by Swift and Yale Reservoirs, and Lake Merwin (stations 14217600, 14218500, 14220000). New capacity tables for these reservoirs were put into effect on October 1, 2008. Chemical analyses July 1959 to June 1960, April 1979 to September 1986. Additional data from April to August 1980 are published in U.S. Geological Survey Open-File Report 81-1007. Water temperatures October 1950 to September 1963. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--88 years (water years 1924-2011), 4,783 ft³/s, 88.86 in/yr, 3,465,000 acre-ft/yr, adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft³/s, Dec. 22, 1933, gage height, 35.0 ft, from floodmarks, from rating curve extended above 56,000 ft³/s on basis of computation of peak flow over dam; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Merwin Dam); minimum daily discharge, 1 ft³/s, July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35,400 ft³/s, Jan. 16, gage height, 15.22 ft; minimum discharge, 1,320 ft³/s, Sept. 19, gage height, 1.60 ft.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2,550	6,710	3,760	9,010	5,600	5,430	11,200	5,570	5,540	3,490	1,900	1,660
2	2,560	8,900	4,560	9,010	5,630	5,440	11,200	5,560	5,230	3,380	1,850	1,670
3	2,560	9,530	5,840	9,010	4,460	5,450	10,300	5,580	4,980	3,400	1,850	1,670
4	2,570	9,550	5,810	8,600	3,010	5,400	7,610	5,540	4,980	3,400	1,840	1,670
5	2,570	9,570	5,820	5,640	3,000	5,390	8,760	6,010	4,980	3,400	1,660	1,680
6	2,570	9,580	5,820	5,470	3,010	5,360	11,100	6,670	4,950	4,330	1,660	1,680
7	2,580	9,570	6,270	7,050	3,850	5,350	10,300	7,460	4,950	4,570	1,660	1,890
8	2,570	9,580	7,540	9,080	5,440	7,650	8,980	7,480	4,970	3,310	1,660	1,990
9	2,630	8,420	9,100	9,080	5,390	10,000	8,430	7,520	4,990	2,980	1,660	1,980
10	2,630	7,130	11,900	9,040	7,630	11,500	8,430	7,460	4,970	2,700	1,570	1,980
11	2,710	8,020	11,800	9,060	10,400	11,600	8,480	7,460	4,910	2,540	1,410	1,980
12	2,710	6,820	11,800	9,100	6,690	11,600	8,540	7,490	4,340	2,550	1,360	2,680
13	2,700	5,830	12,000	11,500	5,980	11,600	8,210	7,480	3,610	2,450	1,360	3,440
14	2,690	5,830	16,400	11,400	5,460	11,600	6,560	6,480	3,060	2,400	1,360	4,020
15	2,690	5,740	11,100	11,900	5,210	11,600	5,550	6,170	2,980	2,400	1,370	4,200
16	2,690	5,210	11,300	31,100	4,750	11,500	5,560	5,600	3,080	2,400	1,360	4,210
17	2,690	4,550	11,600	30,000	4,760	11,400	5,560	7,380	3,190	2,500	1,360	4,190
18	3,560	9,140	10,300	20,800	4,520	11,300	5,710	8,900	3,190	2,610	1,370	2,570
19	3,990	11,700	11,200	12,900	3,860	8,660	5,560	8,870	3,200	2,610	1,370	1,330
20	3,000	11,400	7,490	11,100	3,800	5,750	7,090	8,860	3,180	2,520	1,370	1,340
21	4,150	8,920	5,580	11,100	3,810	5,670	9,370	8,890	3,950	2,410	1,370	1,340
22	4,170	7,610	5,530	11,100	3,820	7,150	9,130	8,920	4,360	2,400	1,360	1,340
23	4,170	6,410	7,250	11,100	3,830	8,240	8,500	8,620	4,380	2,460	1,360	1,340
24	4,180	3,890	8,820	9,560	3,810	8,270	8,520	7,630	4,180	2,530	1,550	1,340
25	4,890	5,010	7,580	5,800	3,780	8,260	8,530	6,630	3,460	2,470	1,830	1,350
26	5,040	5,010	7,560	5,620	3,810	8,270	8,150	5,880	3,020	2,210	1,700	1,760
27	3,050	5,010	7,170	5,620	3,860	8,300	7,020	5,680	2,920	2,010	1,370	2,500
28	8,340	4,990	7,260	5,640	5,120	8,320	5,870	5,830	2,940	2,010	1,370	2,690
29	8,090	4,580	8,230	5,650	---	8,310	5,570	5,850	3,380	2,020	1,560	2,700
30	6,050	4,290	6,380	5,610	---	8,910	5,580	5,750	3,580	2,020	1,660	2,470
31	6,050	---	7,650	5,610	---	10,700	---	5,600	---	2,020	1,660	---
Total	113,400	218,500	260,420	322,260	134,290	263,980	239,370	214,820	121,450	84,500	47,790	66,660
Mean	3,658	7,283	8,401	10,400	4,796	8,515	7,979	6,930	4,048	2,726	1,542	2,222
Max	8,340	11,700	16,400	31,100	10,400	11,600	11,200	8,920	5,540	4,570	1,900	4,210
Min	2,550	3,890	3,760	5,470	3,000	5,350	5,550	5,540	2,920	2,010	1,360	1,330
Ac-ft	224,900	433,400	516,500	639,200	266,400	523,600	474,800	426,100	240,900	167,600	94,790	132,200
Mean adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	2,489	6,991	9,523	10,780	4,387	8,621	8,176	6,784	5,366	2,789	1,462	1,205
CFSM adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	3.40	9.56	13.03	14.75	6.00	11.79	11.18	9.28	9.34	3.82	2.00	1.65
In. adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	3.93	10.67	15.02	17.00	6.25	13.60	12.48	10.70	8.19	4.40	2.31	1.84
Ac-ft adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	153,100	415,900	585,700	662,900	243,600	530,200	486,400	417,200	319,200	171,500	89,890	71,700

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	Calendar Year 2010	Water Year 2011
Total	1,795,560	2,087,440
Mean	4,919	5,719
Max	16,400	31,100
Min	1,090	1,330
Ac-ft	3,561,000	4,140,000
Mean adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	4,907	5,727
CFSM adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	6.71	7.83
In. adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	91.13	106.37
Ac-ft adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir	3,553,000	4,147,000

