

UMATILLA RIVER BASIN

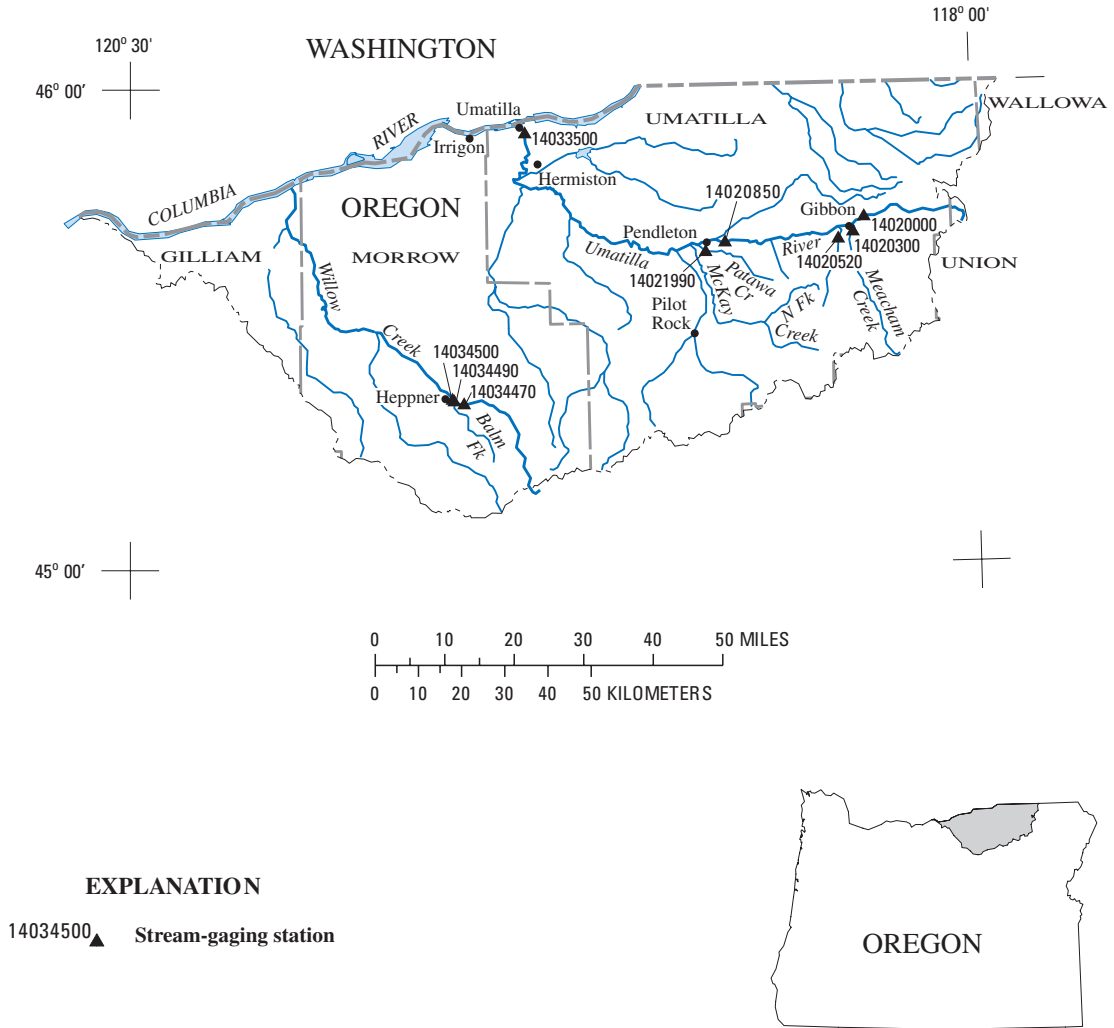


Figure 11. Location of surface-water stations in the Umatilla and Willow Creek Basins.

UMATILLA RIVER BASIN

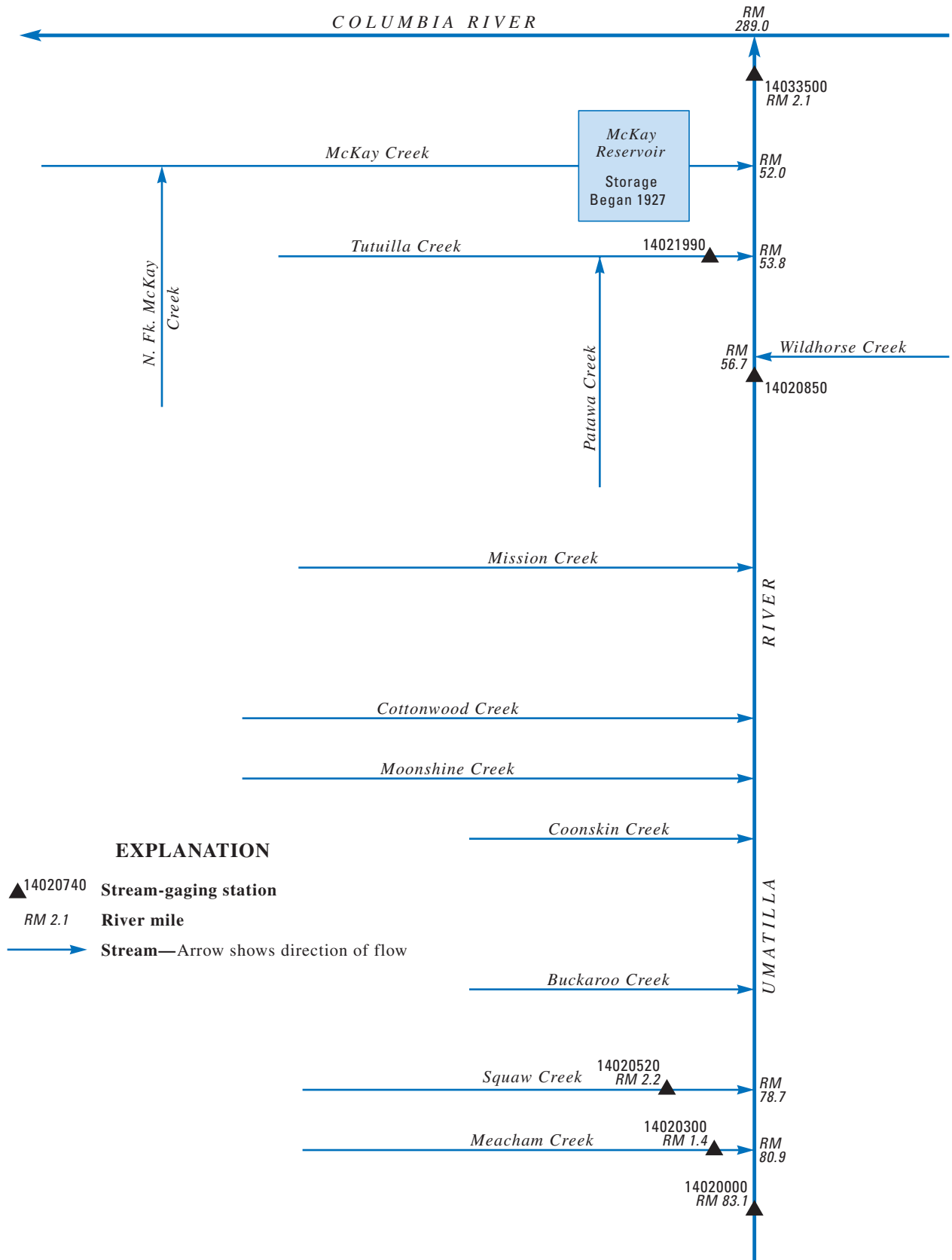


Figure 12. Schematic diagram showing gaging stations in the Umatilla River Basin.

UMATILLA RIVER BASIN

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR

LOCATION.--Lat 45°43'11", long 118°19'20", in SE ¼ SW ¼ sec.21, T.3 N., R.36 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank 0.8 mi downstream from Ryan Creek, 2.2 mi upstream from Meacham Creek, 2.5 mi northeast of Gibbon and at mile 83.1.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--April 1933 to current year.

REVISED RECORDS.--WSP 1935: 1946-48(M), 1950(M), 1953(M), 1956-59(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,854.81 ft above NGVD of 1929. Prior to June 27, 1939, at site 1 mi downstream at datum 43.94 ft lower.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1959 to September 1980 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1934-2005), 226 ft³/s, 23.40 in/yr, 163,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,220 ft³/s Nov. 28, 1995, gage height, 9.40 ft (high-water mark), from rating curve extended above 3,500 ft³/s; maximum gage height, 9.50 ft Jan. 29, 1965; minimum discharge, 16 ft³/s Nov. 9, 1965, momentary regulation from unknown source.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 28	0330	*1,650	*5.83	No other peak greater than base discharge.			

Minimum discharge, 32 ft³/s, Aug. 27, 28.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	50	103	89	121	71	430	192	134	55	37	35
2	48	53	96	85	115	71	408	181	123	53	38	35
3	48	81	93	80	110	71	398	170	114	52	37	35
4	48	71	92	78	110	71	494	169	108	51	36	35
5	47	65	92	75	108	70	498	167	106	50	34	35
6	47	61	87	75	103	70	449	195	105	49	35	35
7	48	58	98	76	99	72	448	215	103	48	35	36
8	47	57	214	76	94	77	429	198	96	48	35	35
9	52	55	299	75	90	82	368	203	90	52	35	35
10	50	55	428	73	86	89	313	206	87	55	35	38
11	49	54	607	72	85	92	306	225	83	52	35	38
12	48	53	548	70	85	97	300	224	80	49	35	37
13	48	52	358	70	91	97	287	211	78	47	35	37
14	48	52	291	68	84	94	270	206	75	46	35	37
15	48	51	272	65	76	92	249	243	73	45	35	37
16	48	51	238	65	74	90	242	682	71	44	34	38
17	51	51	207	70	74	95	323	795	71	44	36	38
18	59	54	184	439	73	88	336	614	72	44	37	38
19	53	53	166	650	74	88	344	507	71	43	35	37
20	55	51	153	456	76	96	331	421	66	41	35	36
21	62	50	142	352	71	106	319	351	65	40	34	36
22	69	50	131	288	69	104	303	316	65	41	35	37
23	67	50	120	248	67	109	303	282	61	41	35	37
24	61	89	113	218	67	108	297	248	60	40	35	37
25	58	256	110	195	67	103	286	219	59	40	35	37
26	55	237	107	178	66	110	276	197	58	39	35	37
27	54	167	102	166	66	509	266	179	61	39	34	37
28	52	133	97	156	69	1,410	246	165	65	38	33	37
29	52	113	96	145	---	925	222	152	61	38	34	37
30	52	110	96	136	---	671	208	140	57	37	35	39
31	50	---	93	128	---	496	---	130	---	37	35	---
TOTAL	1,622	2,383	5,833	5,017	2,370	6,324	9,949	8,403	2,418	1,398	1,089	1,098
MEAN	52.3	79.4	188	162	84.6	204	332	271	80.6	45.1	35.1	36.6
MAX	69	256	607	650	121	1,410	498	795	134	55	38	39
MIN	47	50	87	65	66	70	208	130	57	37	33	35
AC-FT	3,220	4,730	11,570	9,950	4,700	12,540	19,730	16,670	4,800	2,770	2,160	2,180
CFSM	0.40	0.61	1.44	1.24	0.65	1.56	2.53	2.07	0.62	0.34	0.27	0.28
IN.	0.46	0.68	1.66	1.42	0.67	1.80	2.83	2.39	0.69	0.40	0.31	0.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2005, BY WATER YEAR (WY)

	57.0	127	232	263	325	395	536	442	182	63.6	46.8	46.5
MEAN	57.0	127	232	263	325	395	536	442	182	63.6	46.8	46.5
MAX	169	405	716	656	1,074	989	885	1,135	591	110	63.4	81.6
(WY)	(1952)	(1948)	(1976)	(1965)	(1996)	(1972)	(1974)	(1948)	(1974)	(1948)	(1975)	(1959)
MIN	39.1	40.2	44.4	45.7	71.8	189	162	67.0	49.4	39.5	35.1	34.9
(WY)	(1936)	(1936)	(1966)	(1937)	(1977)	(1955)	(1941)	(1934)	(1992)	(1934)	(2005)	(1935)

UMATILLA RIVER BASIN

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1934 - 2005	
ANNUAL TOTAL	99,044		47,904			
ANNUAL MEAN	271		131		226	
HIGHEST ANNUAL MEAN					415	
LOWEST ANNUAL MEAN					114	
HIGHEST DAILY MEAN	1,850	Jan 29	1,410	Mar 28	5,130	Dec 12, 1946
LOWEST DAILY MEAN	43	Aug 20	33	Aug 28	28	Jan 9, 1937
ANNUAL SEVEN-DAY MINIMUM	44	Aug 15	34	Aug 23	31	Sep 26, 1935
ANNUAL RUNOFF (AC-FT)	196,500		95,020		163,400	
ANNUAL RUNOFF (CFSM)	2.07		1.00		1.72	
ANNUAL RUNOFF (INCHES)	28.13		13.60		23.40	
10 PERCENT EXCEEDS	628		304		548	
50 PERCENT EXCEEDS	137		73		116	
90 PERCENT EXCEEDS	49		36		44	

UMATILLA RIVER BASIN

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR—Continued



2005 Water Year
UMATILLA RIVER BASIN

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NR GIBBON, OR

Latitude: 45° 43' 11"

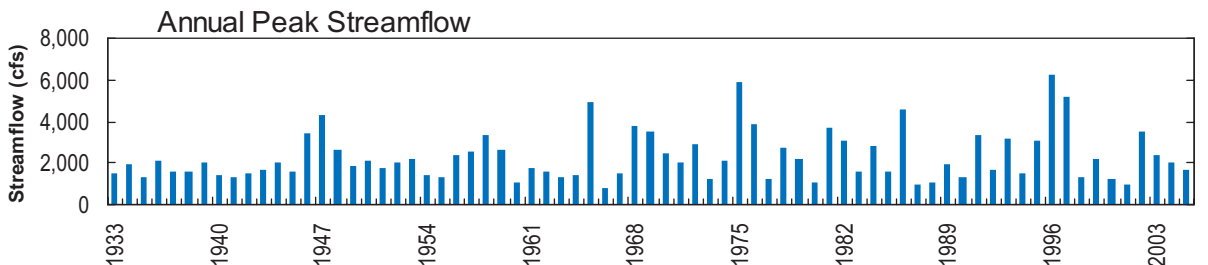
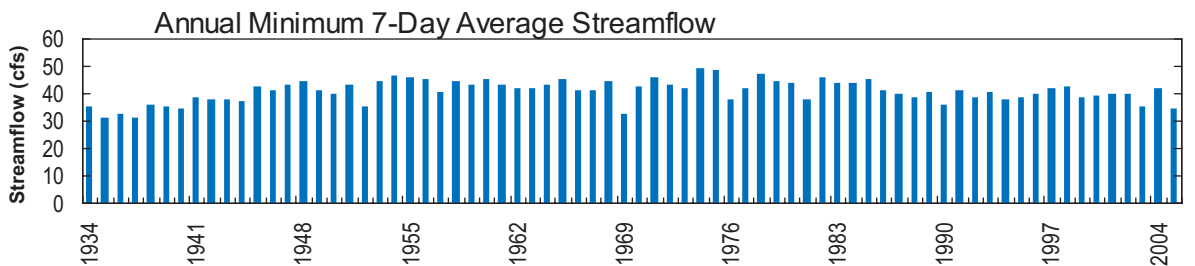
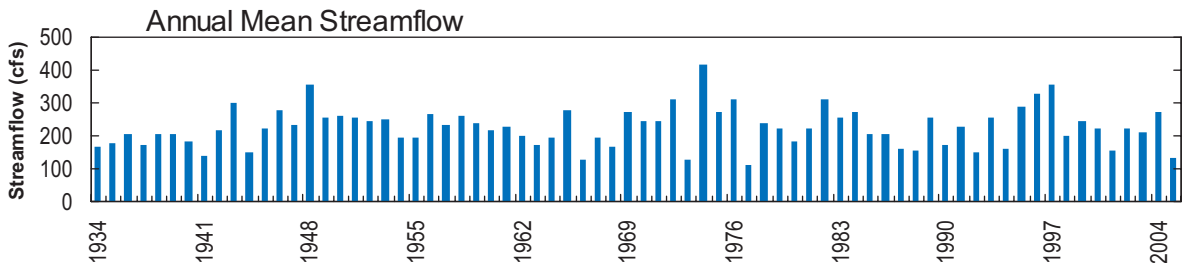
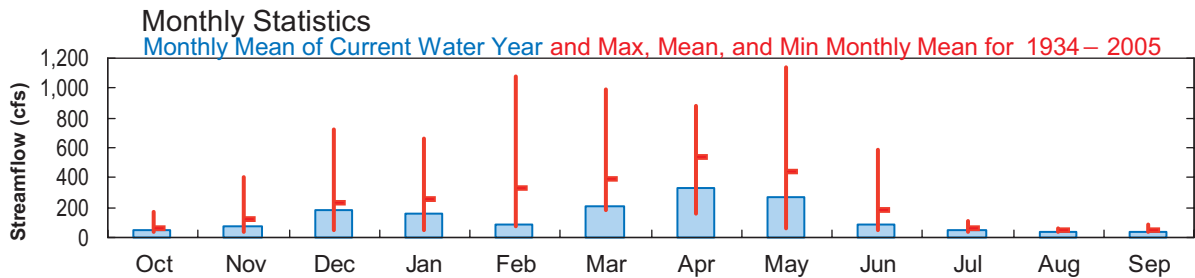
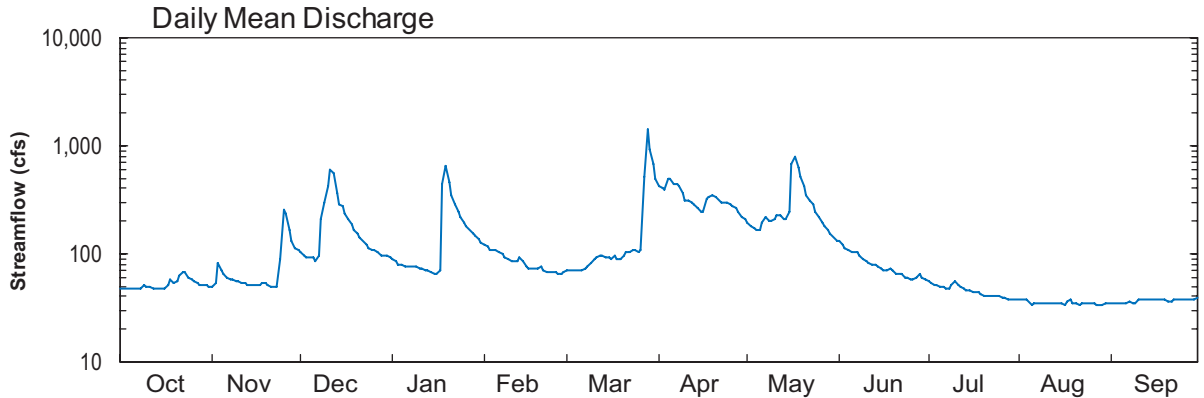
Longitude: 118° 19' 20"

Hydrologic Unit Code: 17070103

Umatilla County

Datum: 1854.81 feet

Drainage Area: 131 mi²



UMATILLA RIVER BASIN

14020300 MEACHAM CREEK AT GIBBON, OR

LOCATION.--Lat 45°41'20", long 118°21'20", in SE ¼ SE ¼ sec.31, T.3 N., R.36 E., Umatilla County, Hydrologic Unit 17070103, on left bank 250 ft downstream from Union Pacific railroad bridge, 0.9 mi southeast of Gibbon, and at mile 1.4.

DRAINAGE AREA.--176 mi².

PERIOD OF RECORD.--August 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,803.05 ft above NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. Possible regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--30 years (water years 1976-2005), 201 ft³/s, 15.49 in/yr, 145,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s Nov. 28, 1995, gage height, 7.67 ft, from rating curve extended above 4,600 ft³/s; maximum gage height, 8.16 ft, from floodmark; minimum discharge, 5.2 ft³/s Aug. 16, 20-22, 27, 28, 2005.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 25, 1975, reached a stage of 7.21 ft, from floodmark, discharge, about 8,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 28	1115	*857	*4.13	May 16	2300	857	4.13

Minimum discharge, 5.2 ft³/s, Aug. 16, 20-22, 27, 28.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	26	e60	61	107	53	399	121	79	20	8.0	6.5
2	14	28	e58	58	97	56	370	110	76	19	7.9	6.3
3	14	36	e56	54	90	59	355	105	71	19	7.8	6.3
4	13	28	e54	52	e81	62	382	102	63	18	7.4	6.5
5	13	25	e52	48	e74	63	396	114	60	17	7.1	6.6
6	13	24	e52	46	e70	64	373	161	59	16	7.0	6.4
7	13	22	e54	45	e68	65	357	292	59	15	6.8	6.2
8	13	21	e58	46	e64	68	344	284	54	15	6.7	6.1
9	13	21	e70	46	e63	70	296	280	49	16	6.5	6.3
10	13	21	148	45	65	73	252	281	46	18	6.4	7.3
11	13	22	342	44	61	74	234	304	42	16	6.4	7.4
12	13	21	412	42	59	75	223	312	40	16	6.4	7.1
13	13	21	329	41	66	75	208	285	38	15	6.4	6.9
14	13	21	281	41	63	71	190	274	36	15	6.5	7.0
15	13	20	259	39	56	67	173	291	33	14	6.2	6.8
16	13	20	231	37	50	65	165	583	32	13	6.0	7.3
17	14	20	198	37	48	67	203	813	32	13	6.4	8.0
18	16	20	172	73	48	63	215	631	31	12	6.7	7.5
19	14	20	150	352	48	62	215	502	31	12	6.3	7.3
20	17	19	133	387	51	64	211	406	29	11	5.9	7.4
21	22	19	119	350	49	66	209	343	28	11	5.8	7.5
22	22	18	105	298	47	65	198	299	26	11	5.8	7.7
23	24	18	93	256	45	68	198	257	25	10	6.0	7.6
24	27	25	88	223	45	69	206	220	23	9.9	6.3	7.7
25	29	41	84	197	45	69	198	185	22	9.7	6.4	7.5
26	30	87	80	176	46	71	189	158	21	9.4	6.2	7.7
27	30	88	76	163	47	233	178	138	22	9.0	6.0	7.3
28	29	e74	70	151	50	779	167	120	24	8.7	6.0	7.4
29	29	e70	67	138	---	752	151	105	24	8.7	6.2	7.7
30	28	e64	67	126	---	602	135	91	22	8.4	6.5	7.8
31	27	---	66	117	---	461	---	80	---	8.2	6.6	---
TOTAL	569	960	4,084	3,789	1,703	4,551	7,390	8,247	1,197	414.0	202.6	213.1
MEAN	18.4	32.0	132	122	60.8	147	246	266	39.9	13.4	6.54	7.10
MAX	30	88	412	387	107	779	399	813	79	20	8.0	8.0
MIN	13	18	52	37	45	53	135	80	21	8.2	5.8	6.1
AC-FT	1,130	1,900	8,100	7,520	3,380	9,030	14,660	16,360	2,370	821	402	423
CFSM	0.10	0.18	0.75	0.69	0.35	0.83	1.40	1.51	0.23	0.08	0.04	0.04
IN.	0.12	0.20	0.86	0.80	0.36	0.96	1.56	1.74	0.25	0.09	0.04	0.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2005, BY WATER YEAR (WY)

MEAN	15.9	74.0	194	243	377	517	538	317	97.6	23.2	12.2	11.8
MAX	28.8	323	582	583	1,074	1,016	956	668	354	52.2	20.7	16.7
(WY)	(2001)	(1996)	(1976)	(1997)	(1996)	(1997)	(1985)	(1991)	(1984)	(1984)	(1993)	(1978)
MIN	8.48	11.2	18.0	22.2	27.1	134	228	58.3	21.7	12.3	6.54	7.10
(WY)	(1988)	(1988)	(1977)	(1977)	(1977)	(1977)	(1986)	(1992)	(1992)	(2003)	(2005)	(2005)

UMATILLA RIVER BASIN

14020300 MEACHAM CREEK AT GIBBON, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1976 - 2005	
ANNUAL TOTAL	92,458.7		33,319.7		201	
ANNUAL MEAN	253		91.3		352	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					66.2	
HIGHEST DAILY MEAN	1,990	Jan 30	813	May 17	4,820	Feb 8, 1996
LOWEST DAILY MEAN	9.0	Aug 21	5.8	Aug 21	5.8	Aug 21, 2005
ANNUAL SEVEN-DAY MINIMUM	10	Aug 15	6.1	Aug 20	6.1	Aug 20, 2005
ANNUAL RUNOFF (AC-FT)	183,400		66,090		145,400	
ANNUAL RUNOFF (CFSM)	1.44		0.519		1.14	
ANNUAL RUNOFF (INCHES)	19.54		7.04		15.49	
10 PERCENT EXCEEDS	656		276		546	
50 PERCENT EXCEEDS	87		46		68	
90 PERCENT EXCEEDS	14		7.0		11	

e Estimated

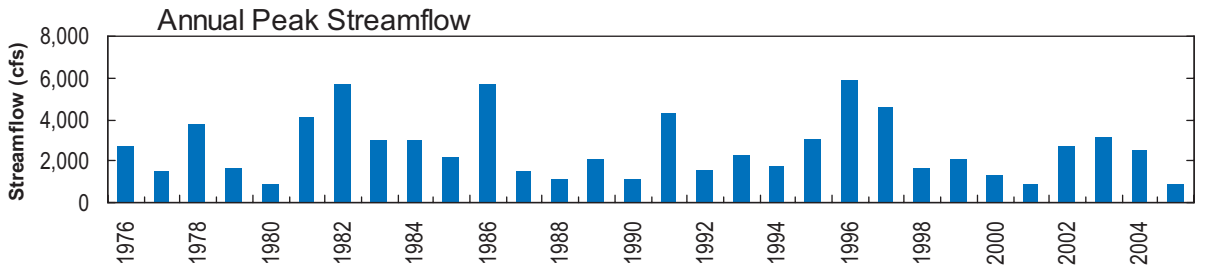
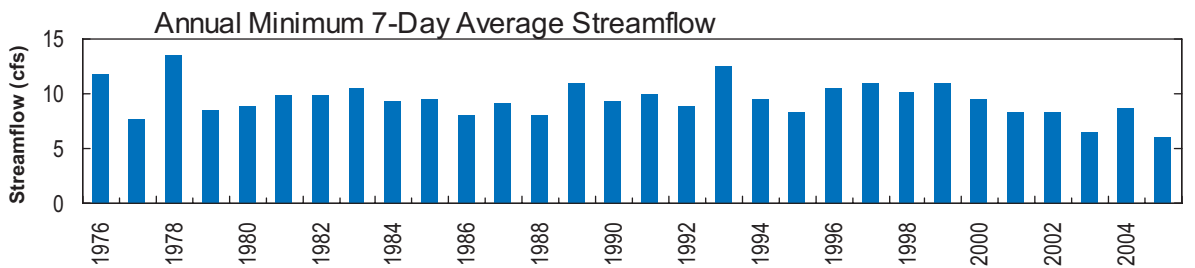
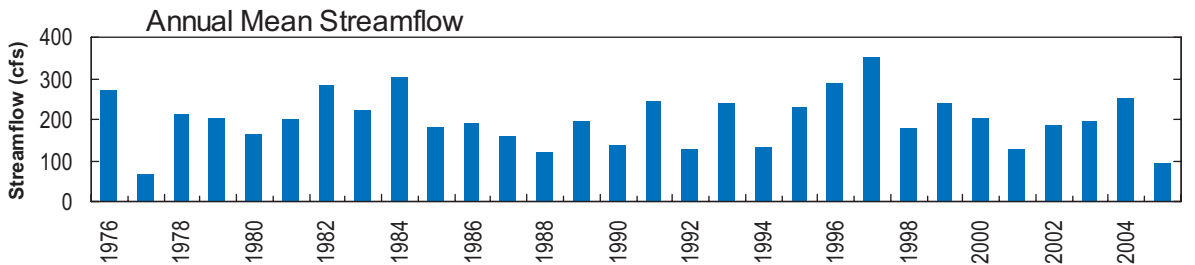
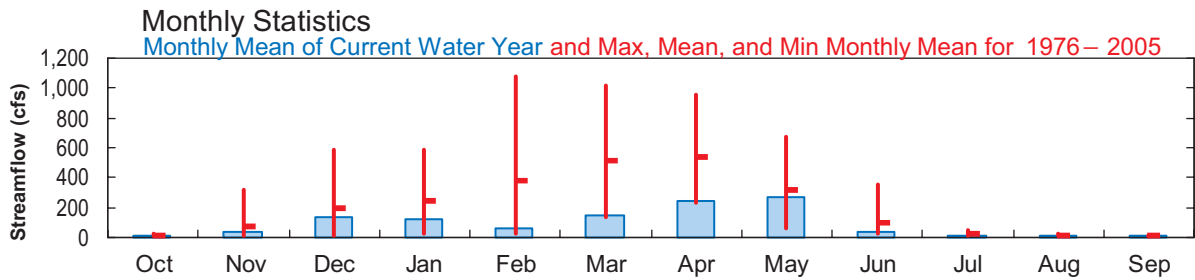
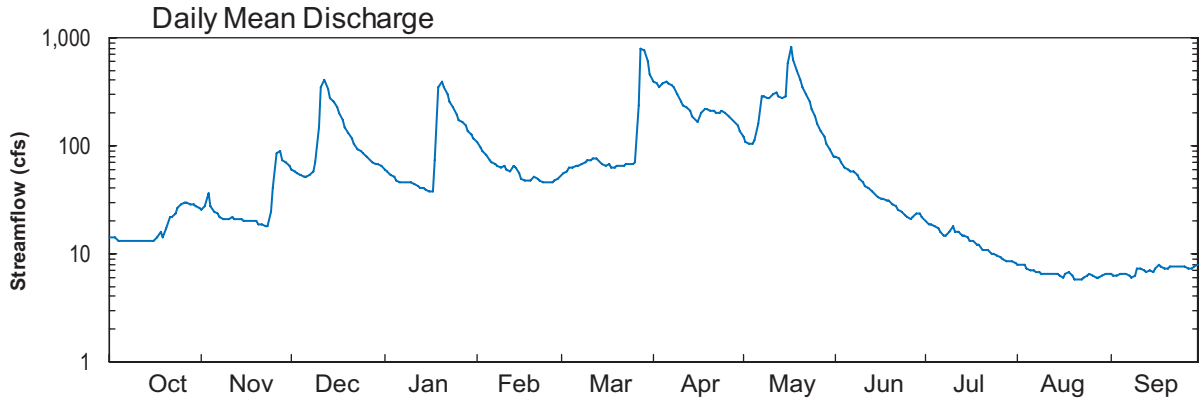


2005 Water Year
 UMATILLA RIVER BASIN
 14020300 MEACHAM CREEK AT GIBBON, OR

Latitude: 45° 41' 20"
 Umatilla County

Longitude: 118° 21' 20"
 Datum: 1803.05 feet

Hydrologic Unit Code: 17070103
 Drainage Area: 176 mi²



UMATILLA RIVER BASIN

14020520 SQUAW CREEK NEAR GIBBON, OR

LOCATION.--Lat 45°40'22", long 118°24'00", in NW ¼ NE ¼ sec.11, T.2 N., R.35 E., Umatilla County, Hydrologic Unit 17070103, on right bank, 2 mi southwest of townsite of Gibbon, and at mile 2.2.

DRAINAGE AREA.--32.6 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,850 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--7 years (water years 1999-2005), 27.7 ft³/s, 11.56 in/yr, 20,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft³/s Jan. 29, 2004, gage height, 3.89 ft, from rating curve extended above 750 ft³/s ; minimum discharge, 0.48 ft³/s Aug. 21, 30, 31, Sept. 1, 3-6 2003.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 370 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 28	0419	*503	*2.71	No other peak greater than base discharge.			

Minimum discharge, 0.60 ft³/s, July 31, Aug. 4-6, gage height, 0.63 ft.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.8	5.6	6.3	10	6.9	69	10	9.5	1.6	0.72	0.94
2	0.96	2.3	5.8	5.8	9.6	7.4	57	9.5	8.4	1.5	0.74	0.91
3	1.0	5.3	6.2	5.4	8.9	7.8	52	8.9	7.6	1.5	0.75	0.93
4	0.98	4.0	6.5	5.2	8.8	8.0	65	8.7	6.7	1.4	0.72	0.91
5	0.93	3.6	6.4	4.9	8.7	8.0	73	8.6	6.5	1.4	0.69	0.93
6	0.87	3.2	5.9	4.7	7.9	8.0	63	10	6.2	1.3	0.68	0.95
7	0.98	3.1	7.2	4.9	7.4	8.0	53	11	5.9	1.3	0.71	0.89
8	0.90	2.9	14	4.9	7.0	7.9	45	11	5.2	1.3	0.74	0.87
9	1.1	2.7	30	4.8	6.5	7.6	39	14	4.6	1.4	0.75	0.93
10	1.1	2.7	58	4.5	6.2	7.4	33	19	4.3	1.7	0.74	1.1
11	1.0	2.6	76	4.4	5.9	7.1	33	38	4.0	1.4	0.76	1.1
12	1.1	2.4	66	4.2	5.9	6.9	32	45	3.8	1.2	0.78	1.0
13	1.1	2.4	48	4.2	7.5	6.4	31	40	3.5	1.2	0.82	1.0
14	1.1	2.4	38	3.9	6.7	6.1	30	36	3.2	1.1	0.84	0.97
15	0.96	2.3	32	3.5	5.9	5.9	28	43	2.9	1.1	0.81	0.98
16	1.0	2.4	26	3.6	5.5	5.9	26	168	2.8	1.1	0.75	1.0
17	1.2	2.2	22	3.8	5.3	6.3	33	152	3.1	1.1	0.82	1.1
18	1.7	2.5	18	45	5.2	5.6	34	110	3.3	1.0	0.93	1.0
19	1.6	2.4	16	85	5.4	5.7	35	99	2.8	1.0	0.88	1.0
20	2.0	2.2	14	62	5.8	5.9	34	82	2.4	0.97	0.82	1.0
21	2.1	2.2	12	48	5.4	6.4	32	64	2.3	0.94	0.79	1.0
22	2.2	2.2	11	37	5.2	6.2	28	52	2.2	0.98	0.78	1.1
23	2.1	2.2	9.8	30	5.2	6.7	26	43	1.9	1.0	0.80	1.1
24	2.4	3.2	8.9	25	5.1	6.7	23	36	1.8	0.92	0.85	1.1
25	2.2	4.8	8.4	21	5.2	6.6	21	29	1.8	0.86	0.85	1.0
26	2.2	7.9	7.9	18	5.3	7.7	18	23	1.7	0.81	0.82	0.99
27	2.2	6.6	7.2	16	5.4	188	16	19	1.9	0.78	0.83	1.0
28	2.1	5.6	6.8	15	5.9	337	14	16	2.0	0.75	0.87	1.0
29	2.1	4.8	6.7	13	---	175	13	13	1.8	0.74	0.90	1.0
30	2.1	5.0	6.9	12	---	126	12	11	1.6	0.73	0.96	1.1
31	2.0	---	6.6	11	---	88	---	9.9	---	0.72	0.96	---
TOTAL	46.28	99.9	593.8	517.0	182.8	1,093.1	1,068	1,239.6	115.7	34.80	24.86	29.90
MEAN	1.49	3.33	19.2	16.7	6.53	35.3	35.6	40.0	3.86	1.12	0.80	1.00
MAX	2.4	7.9	76	85	10	337	73	168	9.5	1.7	0.96	1.1
MIN	0.87	1.8	5.6	3.5	5.1	5.6	12	8.6	1.6	0.72	0.68	0.87
AC-FT	92	198	1,180	1,030	363	2,170	2,120	2,460	229	69	49	59
CFSM	0.05	0.10	0.59	0.51	0.20	1.08	1.09	1.23	0.12	0.03	0.02	0.03
IN.	0.05	0.11	0.68	0.59	0.21	1.25	1.22	1.41	0.13	0.04	0.03	0.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2005, BY WATER YEAR (WY)

MEAN	2.59	11.4	38.2	50.9	58.4	86.8	48.3	26.8	7.46	1.38	0.94	1.13
MAX	7.55	20.5	88.9	93.8	98.5	144	85.1	70.8	24.8	2.08	1.15	1.91
(WY)	(2001)	(1999)	(1999)	(2004)	(2003)	(2000)	(2002)	(2004)	(2004)	(2004)	(2004)	(2000)
MIN	1.14	2.16	3.80	16.7	6.53	35.3	28.8	8.14	2.62	1.04	0.71	0.83
(WY)	(2000)	(2003)	(2003)	(2005)	(2005)	(2005)	(2004)	(2002)	(2001)	(2002)	(2003)	(2003)

UMATILLA RIVER BASIN

14020520 SQUAW CREEK NEAR GIBBON, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1999 - 2005	
ANNUAL TOTAL	11,522.32		5,045.74			
ANNUAL MEAN	31.5		13.8		27.7	
HIGHEST ANNUAL MEAN					35.5	2000
LOWEST ANNUAL MEAN					13.8	2005
HIGHEST DAILY MEAN	933	Jan 29	337	Mar 28	933	Jan 29, 2004
LOWEST DAILY MEAN	0.76	Aug 21	0.68	Aug 6	0.58	Aug 21, 2003
ANNUAL SEVEN-DAY MINIMUM	0.86	Aug 15	0.72	Aug 1	0.60	Aug 31, 2003
ANNUAL RUNOFF (AC-FT)	22,850		10,010		20,100	
ANNUAL RUNOFF (CFSM)	0.966		0.424		0.851	
ANNUAL RUNOFF (INCHES)	13.15		5.76		11.56	
10 PERCENT EXCEEDS	84		36		77	
50 PERCENT EXCEEDS	11		4.9		6.9	
90 PERCENT EXCEEDS	1.1		0.89		0.95	



2005 Water Year
 UMATILLA RIVER BASIN
 14020520 SQUAW CREEK NEAR GIBBON, OR

Latitude: 45° 40' 22"

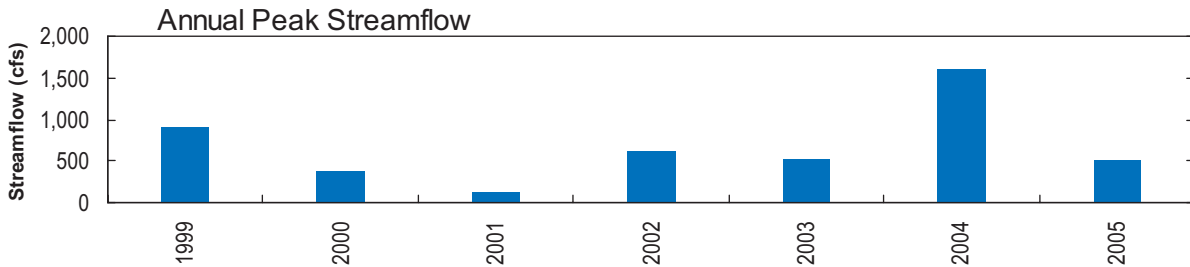
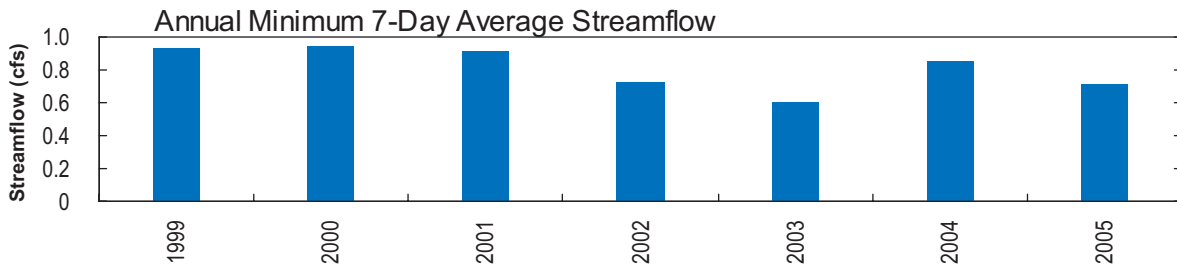
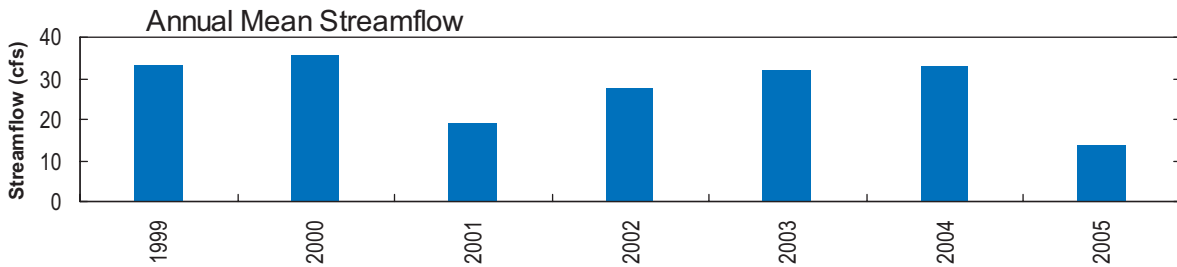
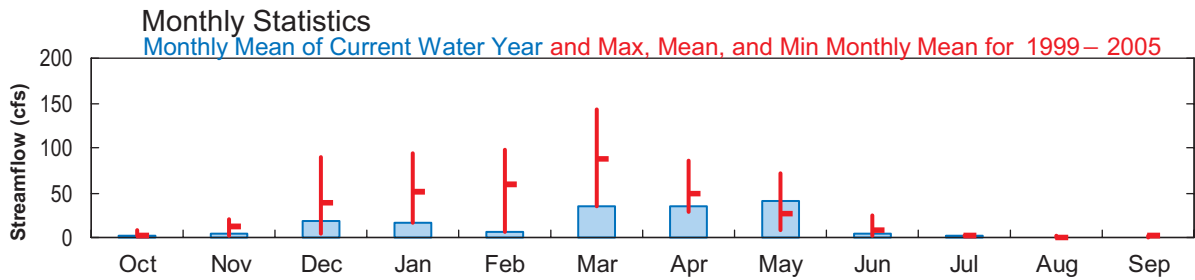
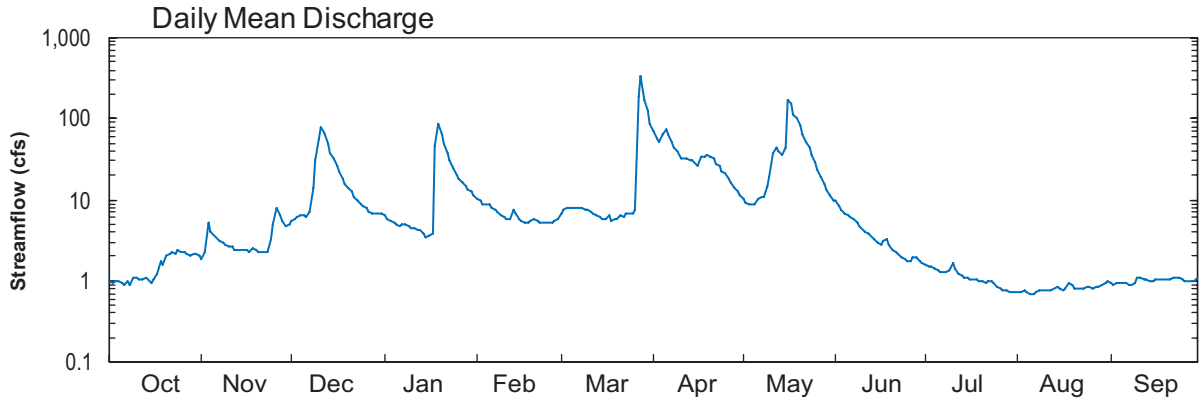
Longitude: 118° 24' 00"

Hydrologic Unit Code: 17070103

Umatilla County

Datum: 1850 feet

Drainage Area: 32.6 mi²



UMATILLA RIVER BASIN

14020850 UMATILLA RIVER AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR

LOCATION.--Lat 45°40'18", long 118°44'08", in NE ¼ NW ¼ sec.7, T.2 N., R.33 E., Umatilla County, Hydrologic Unit 17070103, on left bank, 0.5 mi east of west line of boundary for Umatilla Indian Reservation, 1.6 mi upstream from Wildhorse Creek, 2.5 mi east of Post Office in Pendleton and at mile 58.3.

DRAINAGE AREA.--440.8 mi².

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,130 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No known regulation. Many diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--10 years (water years 1996-2005), 526 ft³/s, 381,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s Feb. 9, 1996, gage height, 11.64 ft; minimum discharge, 25 ft³/s Aug. 19, 2003.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 28	1215	*3,030	*6.59	No other peak greater than base discharge.			

Minimum discharge, 27 ft³/s, Aug. 7, 8, 16, 17.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	74	210	172	281	153	825	331	204	72	31	33
2	55	76	198	165	263	155	727	306	193	69	34	32
3	55	115	189	156	248	159	706	289	176	67	34	33
4	54	116	183	149	237	162	789	277	161	65	32	34
5	54	103	182	141	239	165	864	283	154	62	31	34
6	54	96	179	135	226	166	778	311	152	59	29	35
7	57	92	185	133	216	167	715	460	149	58	29	34
8	56	89	263	133	204	172	708	472	140	57	28	33
9	58	88	472	133	193	178	649	472	130	63	29	33
10	60	86	547	128	186	185	581	477	123	71	29	38
11	59	85	825	124	178	191	550	524	117	70	29	42
12	58	84	1,050	120	175	194	538	549	114	63	30	42
13	57	83	776	116	187	197	517	517	111	59	32	40
14	57	82	637	113	184	193	488	487	108	57	33	38
15	57	81	588	105	172	187	459	531	104	53	32	38
16	58	82	538	104	157	182	438	1,200	101	49	30	39
17	60	81	477	101	152	187	512	1,920	101	49	30	42
18	69	82	425	254	150	180	547	1,430	104	47	35	41
19	68	84	380	951	150	175	558	1,140	101	44	34	40
20	67	80	344	889	159	179	551	886	94	42	31	38
21	74	79	314	766	154	192	537	728	89	40	29	38
22	87	78	287	650	148	194	513	650	89	40	29	38
23	88	78	260	569	144	204	499	575	85	44	31	38
24	85	92	238	508	140	204	511	506	82	42	33	40
25	82	209	223	461	139	199	489	444	79	40	34	39
26	79	401	210	423	139	196	474	389	78	39	32	37
27	78	319	201	393	140	472	454	340	78	37	31	37
28	77	272	191	368	145	2,540	432	298	90	35	30	37
29	76	233	185	344	---	2,010	395	265	88	34	29	37
30	75	219	183	320	---	1,460	363	235	79	34	33	40
31	74	---	182	299	---	1,020	---	210	---	32	34	---
TOTAL	2,043	3,739	11,122	9,423	5,106	12,218	17,167	17,502	3,474	1,593	967	1,120
MEAN	65.9	125	359	304	182	394	572	565	116	51.4	31.2	37.3
MAX	88	401	1,050	951	281	2,540	864	1,920	204	72	35	42
MIN	54	74	179	101	139	153	363	210	78	32	28	32
AC-FT	4,050	7,420	22,060	18,690	10,130	24,230	34,050	34,720	6,890	3,160	1,920	2,220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2005, BY WATER YEAR (WY)

MEAN	63.3	242	583	755	975	1,249	1,231	833	261	65.4	41.9	46.3
MAX	101	717	1,186	1,360	2,801	1,971	1,898	1,524	645	83.3	53.4	58.4
(WY)	(2001)	(1996)	(1997)	(1997)	(1996)	(1997)	(2002)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	47.2	61.0	83.5	246	182	394	572	517	116	38.6	30.3	37.3
(WY)	(2003)	(2003)	(2003)	(2001)	(2005)	(2005)	(2005)	(2000)	(2005)	(2003)	(2003)	(2005)

UMATILLA RIVER BASIN

14020850 UMATILLA RIVER AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1996 - 2005	
ANNUAL TOTAL	228,675		85,474			
ANNUAL MEAN	625		234		526	
HIGHEST ANNUAL MEAN					777	1997
LOWEST ANNUAL MEAN					234	2005
HIGHEST DAILY MEAN	5,320	Jan 30	2,540	Mar 28	11,700	Feb 9, 1996
LOWEST DAILY MEAN	39	Aug 21	28	Aug 8	27	Aug 16, 2003
ANNUAL SEVEN-DAY MINIMUM	42	Aug 15	29	Aug 6	27	Aug 16, 2003
ANNUAL RUNOFF (AC-FT)	453,600		169,500		381,400	
10 PERCENT EXCEEDS	1,440		548		1,320	
50 PERCENT EXCEEDS	316		139		231	
90 PERCENT EXCEEDS	55		34		43	

UMATILLA RIVER BASIN

14020850 UMATILLA RIVER AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR—Continued



2005 Water Year
UMATILLA RIVER BASIN

14020850 UMATILLA R AT W RESERVATION BNDY NR PENDLETON, OR

Latitude: 45° 40' 18"

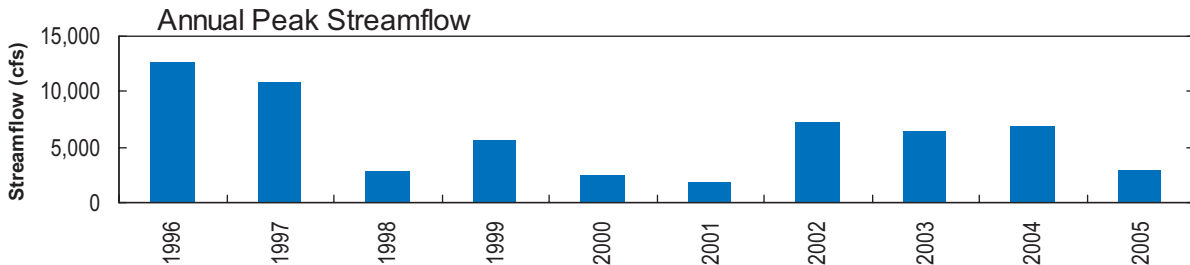
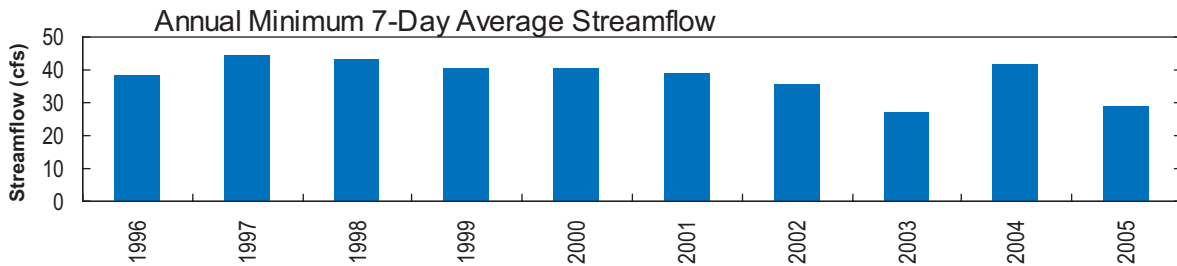
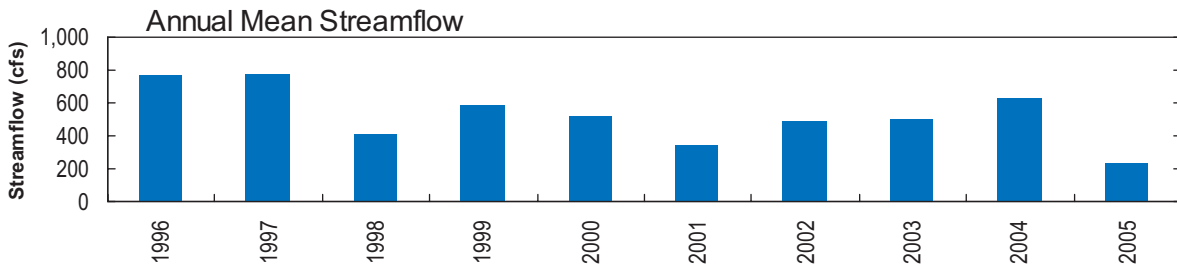
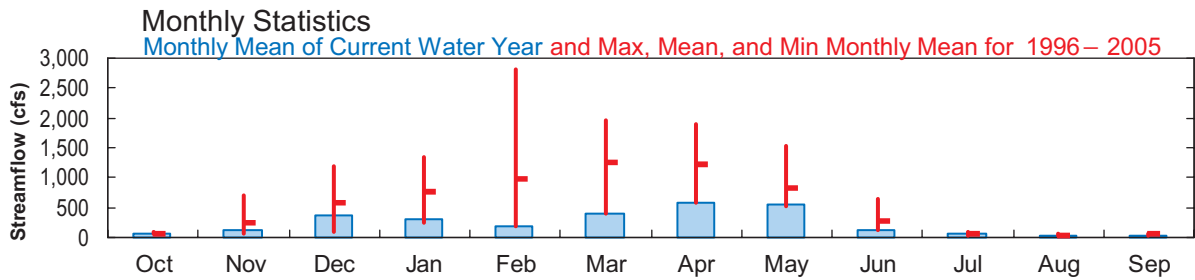
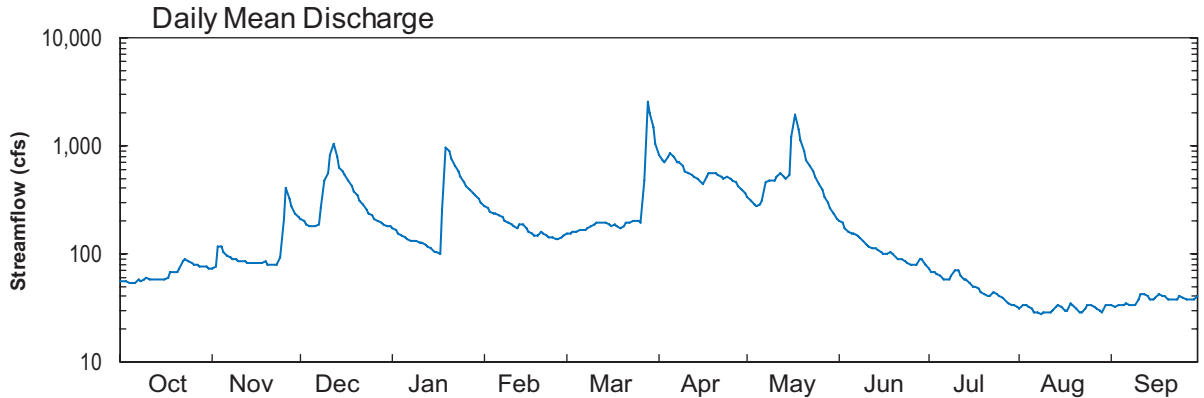
Longitude: 118° 44' 08"

Hydrologic Unit Code: 17070103

Umatilla County

Datum: 1130 feet

Drainage Area: 441 mi²



UMATILLA RIVER BASIN

14021990 TUTUILLA CREEK AT PENDLETON, OR

LOCATION.--Lat 45°39'33", long 118°47'53", in NE ¼ NW ¼ sec.15, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on left bank, 265 ft upstream from Tutilla Creek Road bridge and at mile 0.95.

DRAINAGE AREA.--62.3 mi².

PERIOD OF RECORD.--January 2004 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,090 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No known regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 225 ft³/s June 10, 2004, gage height, 8.44 ft, but could have been higher during period of estimated daily discharge Jan. 29, 2004; no flow part or all of each day Aug. 3 to Sept. 30, 2005.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 133 ft³/s May 16, gage height, 7.37 ft; no flow part or all of each day Aug. 3 to Sept. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.21	0.33	0.36	0.38	0.28	0.50	0.45	0.34	0.85	e0.14	e0.01	0.00
2	0.19	1.00	0.34	0.38	0.30	0.50	0.44	0.36	0.84	e0.13	e0.01	0.00
3	0.16	0.63	0.34	0.37	0.31	0.49	0.52	0.32	0.77	e0.13	e0.00	0.00
4	0.18	0.34	0.34	0.37	0.33	0.49	0.48	0.32	0.72	e0.12	0.01	0.00
5	0.10	0.34	0.34	0.33	0.32	0.49	0.42	0.19	0.87	e0.10	0.01	0.00
6	0.10	0.34	0.37	0.35	0.32	0.48	0.41	0.19	0.73	e0.09	0.01	0.00
7	0.09	0.34	0.40	0.34	0.32	0.46	0.41	0.17	0.68	e0.09	0.00	0.00
8	0.08	0.31	0.37	0.34	0.33	0.46	0.41	0.32	0.63	e0.08	0.00	0.00
9	0.14	0.33	0.37	0.34	0.34	0.46	0.41	0.47	0.60	e0.10	0.00	0.00
10	0.23	0.34	0.34	0.34	0.34	0.44	0.41	0.40	0.54	e0.20	0.00	0.00
11	0.25	0.34	0.35	0.34	0.44	0.42	0.42	0.35	0.52	e0.10	0.00	0.00
12	0.25	0.34	0.35	0.34	0.34	0.41	0.38	0.36	0.47	e0.09	0.00	0.00
13	0.23	0.30	0.38	0.34	0.32	0.42	0.38	0.48	0.52	e0.08	0.00	0.00
14	0.24	0.28	0.39	0.34	0.29	0.43	0.34	0.40	0.47	e0.08	0.00	0.00
15	0.24	0.29	0.41	e0.28	0.29	0.42	0.36	0.80	0.32	e0.08	0.00	0.00
16	0.16	0.31	0.42	e0.30	0.40	0.43	0.43	60	0.33	e0.08	0.00	0.00
17	0.38	0.29	0.42	e0.30	0.45	0.42	0.38	33	0.40	e0.07	0.00	0.00
18	0.26	0.31	0.42	e0.30	0.79	0.42	0.34	17	0.55	e0.07	0.00	0.00
19	0.25	0.33	0.42	e0.31	0.64	0.43	0.34	14	0.30	e0.06	0.00	0.00
20	0.27	0.32	0.41	0.31	0.55	0.43	0.34	10	0.23	e0.06	0.00	0.00
21	0.27	0.33	0.41	0.32	0.55	0.42	0.34	7.8	0.24	e0.07	0.00	0.00
22	0.28	0.34	0.38	0.33	0.55	0.46	0.33	6.9	0.20	e0.09	0.00	0.00
23	0.26	0.33	0.38	0.32	0.51	0.48	0.36	5.8	0.20	e0.07	0.00	0.00
24	0.26	0.36	0.39	0.33	0.51	0.45	0.40	4.4	0.13	e0.06	0.00	0.00
25	0.29	0.36	0.41	0.34	0.51	0.45	0.39	3.4	0.11	e0.05	0.00	0.00
26	0.31	0.31	0.38	0.34	0.51	0.46	0.37	2.5	0.10	e0.04	0.00	0.00
27	0.30	0.33	0.38	0.32	0.51	0.70	0.34	1.9	0.12	e0.04	0.00	0.00
28	0.30	0.34	0.38	0.28	0.52	0.50	0.34	1.5	0.28	e0.04	0.00	0.00
29	0.30	0.34	0.42	0.27	---	0.44	0.36	1.1	0.20	e0.02	0.00	0.00
30	0.30	0.38	0.41	0.28	---	0.43	0.35	0.93	0.17	e0.02	0.00	0.00
31	0.30	---	0.38	0.28	---	0.44	---	0.84	---	e0.01	0.00	---
TOTAL	7.18	10.83	11.86	10.11	11.87	14.23	11.65	176.54	13.09	2.46	0.05	0.00
MEAN	0.23	0.36	0.38	0.33	0.42	0.46	0.39	5.69	0.44	0.08	0.00	0.00
MAX	0.38	1.0	0.42	0.38	0.79	0.70	0.52	60	0.87	0.20	0.01	0.00
MIN	0.08	0.28	0.34	0.27	0.28	0.41	0.33	0.17	0.10	0.01	0.00	0.00
AC-FT	14	21	24	20	24	28	23	350	26	4.9	0.1	0.00
CFSM	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.09	0.01	0.00	0.00	0.00
IN.	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.11	0.01	0.00	0.00	0.00

CAL YR2004 TOTAL 1,977.06 MEAN 5.40 MAX 220 MIN 0.08 AC-FT 3,920 CFSM 0.09 IN. 1.22
WTR YR2005 TOTAL 269.87 MEAN 0.74 MAX 60 MIN 0.00 AC-FT 535 CFSM 0.01 IN. 0.17

e Estimated



2005 Water Year
TUTUILLA CREEK AT PENDLETON

14021990 TUTUILLA CREEK AT PENDLETON, OR

Latitude: 45° 39' 33"

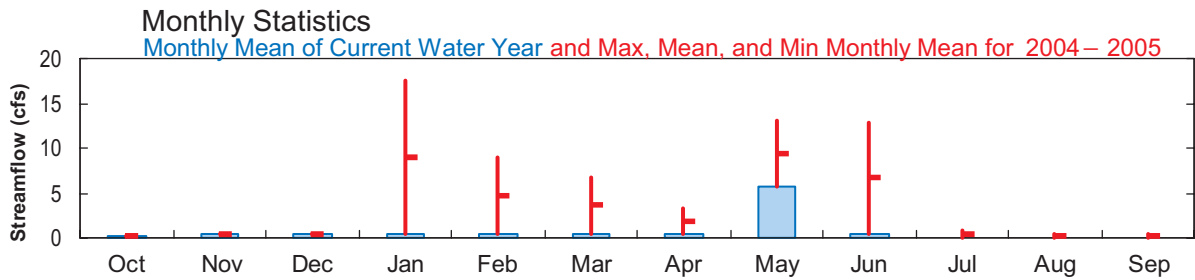
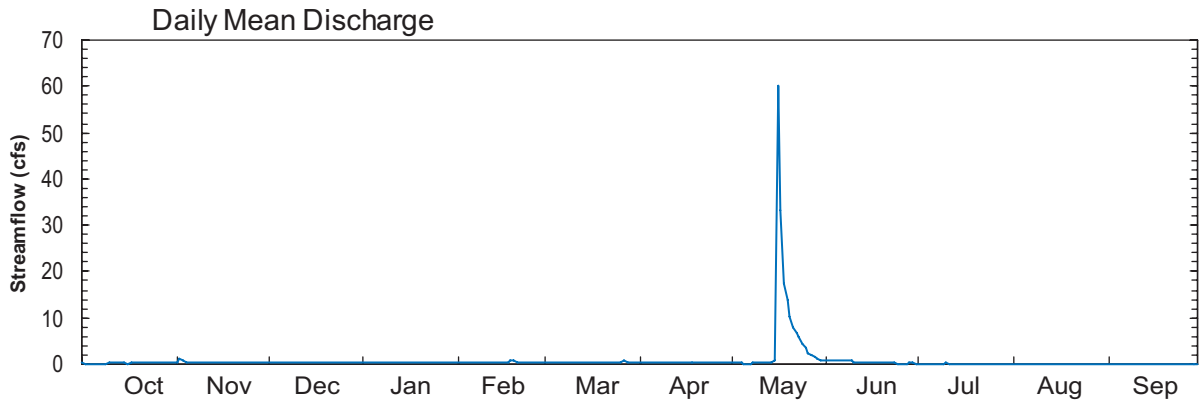
Longitude: 118° 47' 53"

Hydrologic Unit Code: 17070103

Umatilla County

Datum: 1090 feet

Drainage Area: 60.3 mi²



UMATILLA RIVER BASIN

14033500 UMATILLA RIVER NEAR UMATILLA, OR

LOCATION.--Lat 45°54'11", long 119°19'33", in SW ¼ NW ¼ sec.21, T.5 N., R.28 E., Umatilla County, Hydrologic Unit 17070103, on left bank, 1.2 mi southeast of Umatilla, 1.6 mi downstream from West Extension main canal of Umatilla project and at mile 2.1.

DRAINAGE AREA.--2,290 mi².

PERIOD OF RECORD.--October 1903 to current year.

REVISED RECORDS.--WSP 794: Drainage area. WSP 1398: 1909, 1911, 1914, 1928, 1935.

GAGE.--Water-stage recorder. Datum of gage is 330.47 ft above NGVD of 1929. Oct. 21, 1903 to Jan. 25, 1931, nonrecording gage.

REMARKS.--No estimated daily discharges. Records fair. Some regulation since 1927 by McKay Reservoir. Many diversions upstream from station for irrigation of lands upstream and downstream from station; Brownell Canal diverts downstream from station. Diversions since 1908 to Cold Springs Reservoir, an off-channel reservoir, capacity, 52,380 acre-ft. Continuous water-quality records for the period October 1962 to September 1969 have been collected at this location. U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--78 years (water years 1928-2005), 475 ft³/s, 343,900 acre-ft/yr. Water years prior to 1928 not included in computation of average discharge owing to increased regulation and diversion since 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,800 ft³/s Jan. 30, 1965, gage height, 10.75 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 17	1215	*2,200	*4.57				

Minimum discharge, 0.77 ft³/s, Aug. 9.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	191	276	273	280	384	233	653	287	201	39	1.1	51
2	194	279	247	270	367	237	511	269	194	1.3	1.1	49
3	193	290	229	263	356	230	481	275	167	1.4	2.4	44
4	194	309	222	252	343	234	523	257	168	1.1	1.2	47
5	202	313	215	242	332	242	615	252	166	4.3	2.5	53
6	214	305	214	231	332	245	560	252	179	4.4	12	53
7	219	297	216	236	323	245	490	318	176	4.1	4.2	64
8	224	295	217	230	313	242	524	521	166	3.9	2.3	86
9	223	295	300	228	300	243	469	553	162	1.9	0.92	95
10	225	289	487	227	287	224	429	584	153	1.9	2.6	98
11	227	286	641	224	280	204	379	540	163	1.4	1.2	105
12	223	282	1,020	219	270	202	367	656	178	1.3	1.1	98
13	220	284	1,020	217	265	199	350	617	179	3.2	1.2	98
14	225	282	745	212	274	210	332	512	170	1.6	1.7	103
15	222	282	550	202	270	205	304	498	184	1.3	1.2	101
16	217	283	477	197	259	199	272	784	182	1.5	1.8	107
17	222	282	423	197	246	187	309	2,010	166	1.4	54	99
18	229	281	362	216	240	194	406	1,790	160	1.2	49	105
19	235	280	352	462	239	187	391	1,390	155	0.97	50	100
20	237	282	366	828	241	181	390	1,080	152	3.3	54	95
21	237	279	408	690	247	196	360	860	136	1.3	47	92
22	241	277	389	569	242	213	327	686	134	1.1	44	94
23	252	277	367	468	235	206	296	549	129	1.2	43	93
24	251	281	349	389	230	211	297	469	123	1.5	45	95
25	249	289	331	352	227	208	304	413	128	1.1	47	94
26	244	418	319	370	226	201	304	312	136	0.97	69	94
27	242	530	306	360	226	205	382	266	134	3.2	72	92
28	243	443	295	358	231	991	276	283	143	1.2	62	94
29	242	371	292	341	---	1,830	254	232	139	1.1	51	90
30	247	313	286	327	---	1,370	291	192	110	1.3	47	89
31	272	---	282	392	---	957	---	185	---	1.2	47	---
TOTAL	7,056	9,250	12,200	10,049	7,785	10,931	11,846	17,892	4,733	95.64	819.52	2,578
MEAN	228	308	394	324	278	353	395	577	158	3.09	26.4	85.9
MAX	272	530	1,020	828	384	1,830	653	2,010	201	39	72	107
MIN	191	276	214	197	226	181	254	185	110	0.97	0.92	44
AC-FT	14,000	18,350	24,200	19,930	15,440	21,680	23,500	35,490	9,390	190	1,630	5,110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2005, BY WATER YEAR (WY)

MEAN	113	271	537	715	949	1,152	1,145	616	137	22.1	24.4	47.6
MAX	481	1,302	1,948	2,366	3,786	3,678	3,056	3,362	805	149	95.0	153
(WY)	(1928)	(1928)	(1974)	(1965)	(1996)	(1972)	(1958)	(1948)	(1950)	(1942)	(1993)	(1998)
MIN	4.18	40.2	70.8	89.3	86.7	154	4.56	1.55	1.33	0.81	1.04	0.59
(WY)	(1978)	(1932)	(1988)	(1930)	(1977)	(1977)	(1968)	(1977)	(1979)	(1985)	(1985)	(1987)

UMATILLA RIVER BASIN

14033500 UMATILLA RIVER NEAR UMATILLA, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1928 - 2005	
ANNUAL TOTAL	220,275		95,235.16			
ANNUAL MEAN	602		261		475	
HIGHEST ANNUAL MEAN					1,026	1997
LOWEST ANNUAL MEAN					77.5	1977
HIGHEST DAILY MEAN	4,530	Jan 30	2,010	May 17	15,600	Jan 30, 1965
LOWEST DAILY MEAN	12	Jul 23	0.92	Aug 9	0.00	Apr 20, 1930
ANNUAL SEVEN-DAY MINIMUM	27	Aug 6	1.3	Jul 28	0.00	Oct 18, 1931
ANNUAL RUNOFF (AC-FT)	436,900		188,900		343,900	
10 PERCENT EXCEEDS	1,470		488		1,320	
50 PERCENT EXCEEDS	352		231		162	
90 PERCENT EXCEEDS	62		2.6		6.2	

UMATILLA RIVER BASIN

14033500 UMATILLA RIVER NEAR UMATILLA, OR—Continued



2005 Water Year
UMATILLA RIVER BASIN

14033500 UMATILLA RIVER NEAR UMATILLA, OR

Latitude: 45° 54' 11"

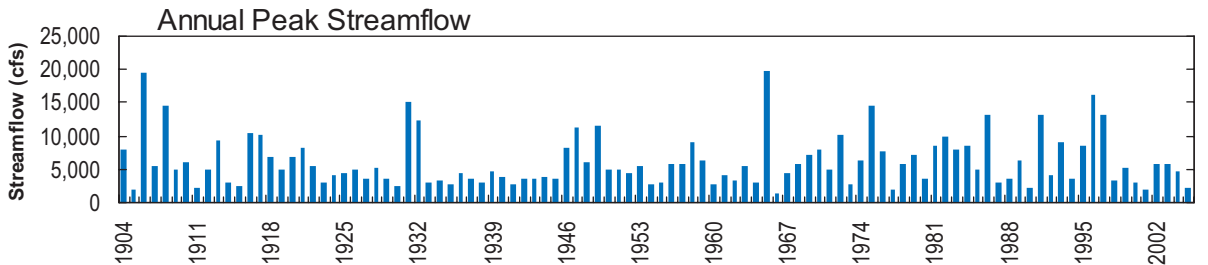
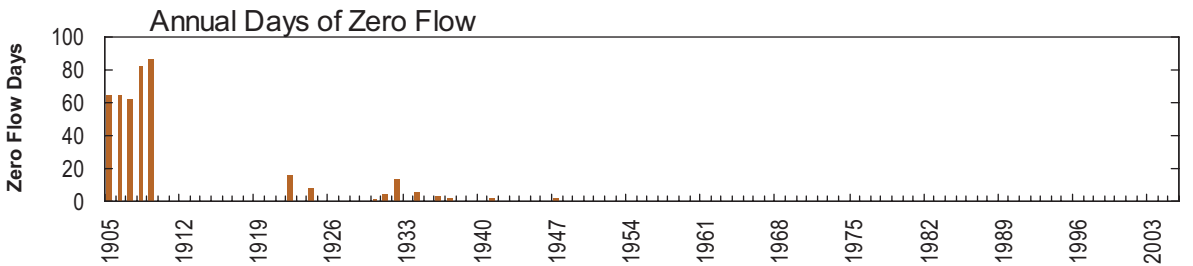
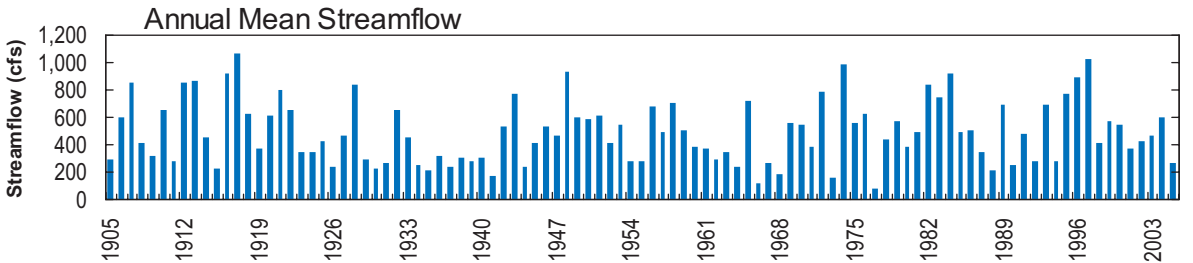
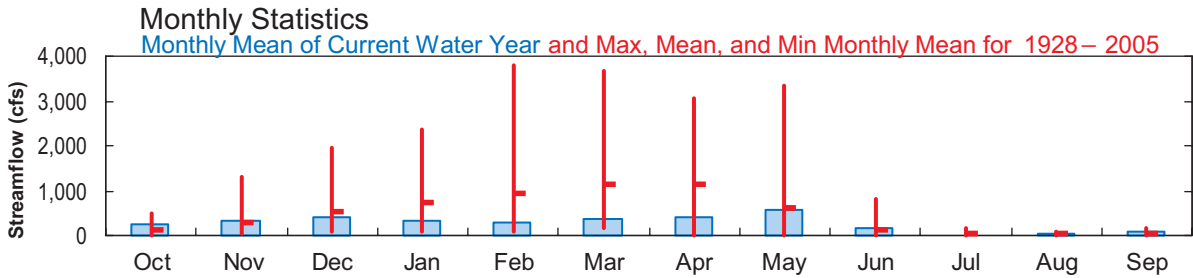
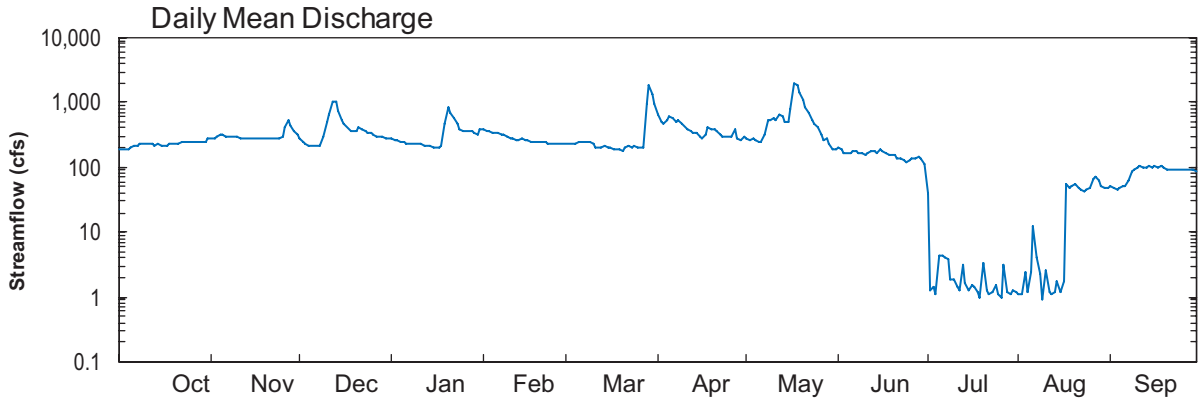
Longitude: 119° 19' 33"

Hydrologic Unit Code: 17070103

Umatilla County

Datum: 330.47 feet

Drainage Area: 2290 mi²



WILLOW CREEK BASIN

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR

LOCATION.--Lat 45°20'27", long 119°30'53", in NE ¼ NE ¼ sec.1, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank 1.5 mi southeast of Heppner, 1.7 mi upstream from Willow Creek dam and at mile 54.1.

DRAINAGE AREA.--67.6 mi².

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,085.41 ft above NGVD of 1929 (levels by Corps of Engineers).

REMARKS.--Records fair except for estimated daily discharges, which are poor. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--23 years (water years 1983-2005), 20.4 ft³/s, 14,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 544 ft³/s Feb. 1, 1997, gage height, 9.60 ft, from crest-stage gage; minimum discharge, no flow several days in August 2000, Aug. 27 to Oct. 7, 2001, July 21 to Sept. 30, 2005, and may have been no flow during period of no gage-height record July 31 to Sept. 14, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	1815	*202	*7.66	No other peak greater than base discharge.			

Minimum discharge, no flow part or all of each day July 21 to Sept. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	3.5	4.5	4.8	6.3	8.4	6.7	11	16	2.1	0.00	0.00
2	1.5	3.5	3.7	4.1	6.2	8.3	6.4	12	15	1.9	0.00	0.00
3	1.5	5.3	3.8	3.2	5.8	8.4	7.6	15	13	1.9	0.00	0.00
4	1.5	4.4	3.9	2.2	5.8	8.1	10	14	11	1.7	0.00	0.00
5	1.5	3.9	3.7	3.0	6.1	7.8	9.9	15	13	1.5	0.00	0.00
6	1.7	3.8	3.6	3.9	5.2	6.3	10	32	12	1.4	0.00	0.00
7	1.9	3.7	3.9	4.5	6.0	3.8	10	38	11	1.3	0.00	0.00
8	2.0	3.6	4.8	4.1	4.2	5.5	10	40	9.7	1.3	0.00	0.00
9	2.5	3.5	5.5	4.0	4.8	6.3	11	41	9.0	1.8	0.00	0.00
10	3.0	3.5	7.5	3.9	4.7	6.3	11	40	8.4	2.2	0.00	0.00
11	2.5	3.5	9.5	3.0	4.8	6.6	11	60	7.8	1.9	0.00	0.00
12	2.4	3.5	12	4.2	5.7	6.7	9.1	64	7.4	1.5	0.00	0.00
13	2.3	3.4	8.9	3.8	6.7	6.7	7.3	56	7.0	1.3	0.00	0.00
14	2.2	3.4	8.2	3.0	5.4	6.2	7.5	51	6.7	1.1	0.00	0.00
15	2.2	3.2	8.0	2.4	3.6	4.7	6.8	59	6.3	1.0	0.00	0.00
16	2.2	3.5	7.2	e2.2	4.3	5.9	6.7	154	5.9	0.90	0.00	0.00
17	2.3	3.5	6.5	e2.8	4.6	6.6	10	157	5.9	0.85	0.00	0.00
18	2.8	3.6	6.0	10	4.7	3.7	9.4	114	5.6	0.72	0.00	0.00
19	2.7	4.1	5.7	11	5.4	3.4	9.1	87	5.0	0.54	0.00	0.00
20	2.7	3.8	5.4	10	6.3	3.3	9.1	74	4.6	0.42	0.00	0.00
21	3.8	3.0	5.1	10	5.3	3.0	8.9	78	4.0	0.06	0.00	0.00
22	5.2	4.1	5.0	9.1	5.4	2.9	8.4	72	3.7	0.02	0.00	0.00
23	4.4	3.8	4.3	8.6	5.3	3.3	7.9	64	3.0	0.01	0.00	0.00
24	3.8	4.2	4.7	8.3	5.6	3.1	8.3	55	3.1	0.00	0.00	0.00
25	3.5	4.6	4.8	7.9	5.7	2.9	12	46	3.0	0.00	0.00	0.00
26	3.3	4.6	4.5	7.6	5.9	3.5	10	38	2.8	0.00	0.00	0.00
27	3.6	4.2	3.9	8.3	6.1	4.3	9.8	31	2.9	0.00	0.00	0.00
28	3.5	3.9	3.6	8.3	7.0	13	9.9	26	4.2	0.00	0.00	0.00
29	3.6	2.5	5.4	7.8	---	13	11	22	3.4	0.00	0.00	0.00
30	3.7	4.3	5.4	7.4	---	9.6	12	19	2.7	0.00	0.00	0.00
31	3.9	---	4.4	7.0	---	7.7	---	16	---	0.00	0.00	---
TOTAL	85.1	113.4	173.4	180.4	152.9	189.3	276.8	1,601	213.1	27.42	0.00	0.00
MEAN	2.75	3.78	5.59	5.82	5.46	6.11	9.23	51.6	7.10	0.88	0.00	0.00
MAX	5.2	5.3	12	11	7.0	13	12	157	16	2.2	0.00	0.00
MIN	1.4	2.5	3.6	2.2	3.6	2.9	6.4	11	2.7	0.00	0.00	0.00
AC-FT	169	225	344	358	303	375	549	3,180	423	54	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2005, BY WATER YEAR (WY)

	3.02	7.26	14.1	20.9	34.3	54.5	46.8	41.5	16.6	3.75	1.28	1.38
MEAN												
MAX	7.10	21.2	72.8	78.2	109	128	116	110	55.4	11.2	3.99	6.13
(WY)	(1983)	(1987)	(1997)	(1997)	(1996)	(1993)	(1984)	(1995)	(1984)	(1993)	(1997)	(1984)
MIN	0.20	1.45	3.15	5.82	5.46	6.11	9.23	2.73	1.60	0.51	0.00	0.00
(WY)	(1989)	(2003)	(2002)	(2005)	(2005)	(2005)	(2005)	(1992)	(1992)	(2003)	(2005)	(2001)

WILLOW CREEK BASIN

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1983 - 2005	
ANNUAL TOTAL	7,668.49		3,012.82			
ANNUAL MEAN	21.0		8.25		20.4	
HIGHEST ANNUAL MEAN					44.3	1984
LOWEST ANNUAL MEAN					6.13	2002
HIGHEST DAILY MEAN	200	May 28	157	May 17	450	Feb 1, 1997
LOWEST DAILY MEAN	0.25	Aug 21	0.00	Jul 24	0.00	Aug 11, 2000
ANNUAL SEVEN-DAY MINIMUM	0.45	Aug 15	0.00	Jul 24	0.00	Aug 11, 2000
ANNUAL RUNOFF (AC-FT)	15,210		5,980		14,750	
10 PERCENT EXCEEDS	46		12		56	
50 PERCENT EXCEEDS	7.9		4.1		7.6	
90 PERCENT EXCEEDS	1.2		0.00		0.58	

e Estimated

WILLOW CREEK BASIN

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR—Continued



2005 Water Year
WILLOW CREEK BASIN

14034470 WILLOW CREEK ABV WILLOW CR LAKE, NR HEPPNER, OR

Latitude: 45° 20 ' 27"

Longitude: 119° 30 ' 53"

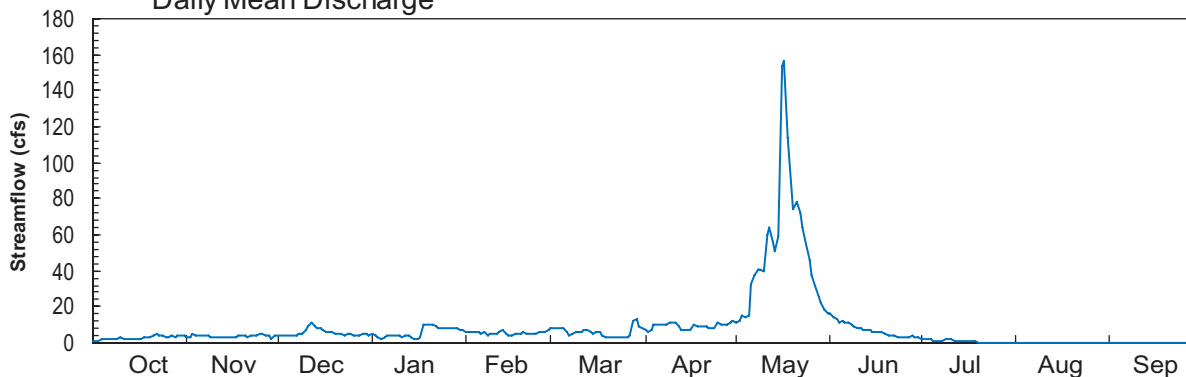
Hydrologic Unit Code: 17070104

Morrow County

Datum: 2085.41 feet

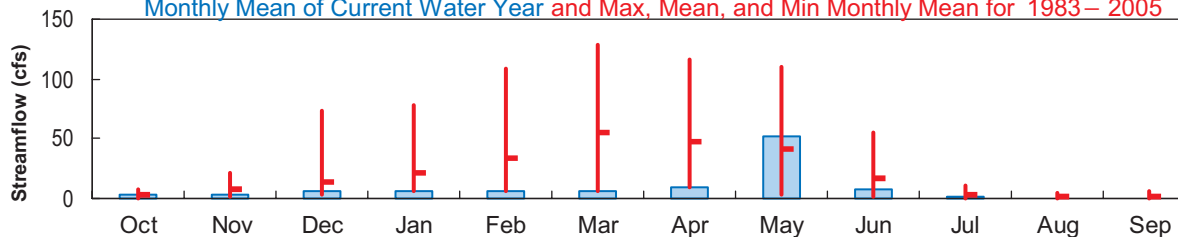
Drainage Area: 67.6 mi²

Daily Mean Discharge

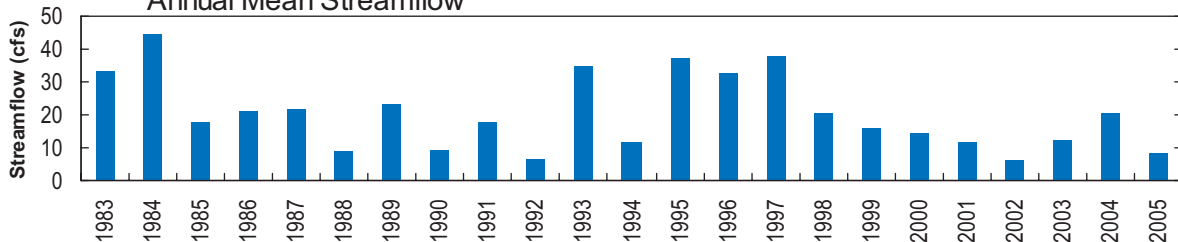


Monthly Statistics

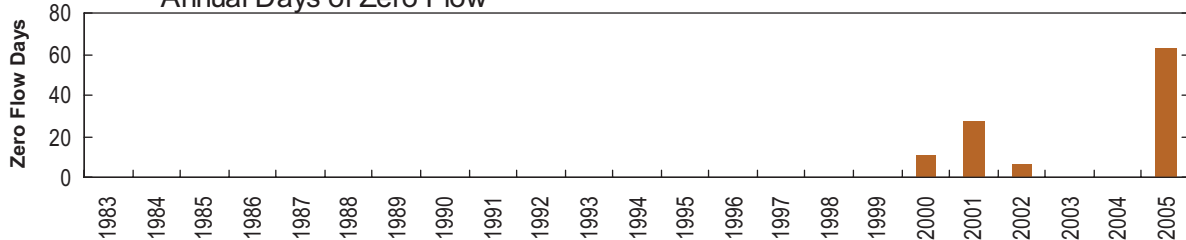
Monthly Mean of Current Water Year and Max, Mean, and Min Monthly Mean for 1983–2005



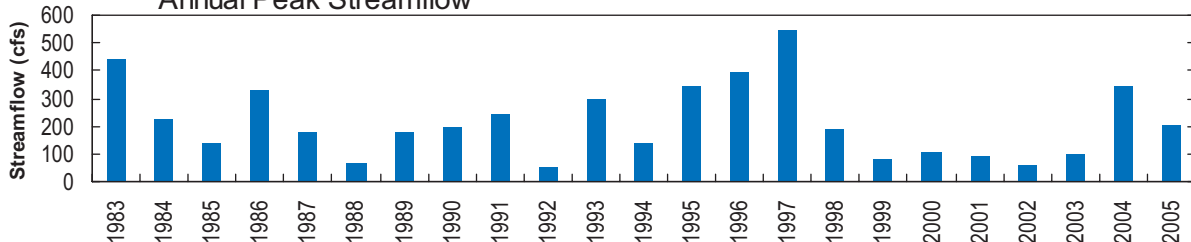
Annual Mean Streamflow



Annual Days of Zero Flow



Annual Peak Streamflow



WILLOW CREEK BASIN

14034490 WILLOW CREEK LAKE AT HEPPNER, OR

LOCATION.--Lat 45°20'50", long 119°32'37", in NW ¼ SE ¼ sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Army Corps of Engineers land, on top left side of spillway on dam on Willow Creek, 2,000 ft upstream from Court Street bridge and at mile 52.4.

DRAINAGE AREA.--96.6 mi².

PERIOD OF RECORD.--February 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Dec. 22, 1983, nonrecording gage at nearby site at present datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Lake is formed behind roller-compacted, concrete dam; storage began Feb. 16, 1983. Capacity, 14,020 acre-ft between elevations 2,000.0 ft, sill of outlet gates, and 2,113.5 ft, crest of spillway. Average minimum lake elevation 2,047.0 ft, storing 2,540 acre-ft. Dead storage, 73 acre-ft below elevation 2,000.0 ft. Reservoir used for flood control. Figures given herein represent total contents. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,340 acre-ft May 8, 1995, elevation, 2,083.06 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 6,280 acre-ft May 29, elevation, 2,076.72 ft; minimum contents, 4,100 acre-ft Sept. 30, elevation, 2,061.23 ft.

Capacity Table (elevation, in feet and contents, in acre-feet)

2,050	2,840	2,070	5,280	2,090	8,630
2,060	3,950	2,080	6,820		

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,067.37	2,065.24	2,063.04	2,062.93	2,064.37	2,065.19	2,065.82	2,067.35	2,076.51	2,076.54	2,073.44	2,066.71
2	2,067.34	2,065.20	2,063.02	2,062.95	2,064.42	2,065.15	2,065.88	2,067.43	2,076.53	2,076.49	2,073.20	2,066.45
3	2,067.33	2,065.12	2,063.01	2,062.96	2,064.46	2,065.13	2,066.00	2,067.54	2,076.52	2,076.45	2,072.97	2,066.19
4	2,067.31	2,065.02	2,063.01	2,062.95	2,064.51	2,065.13	2,066.11	2,067.66	2,076.52	2,076.42	2,072.75	2,065.92
5	2,067.29	2,064.91	2,062.99	2,062.96	2,064.54	2,065.14	2,066.21	2,067.80	2,076.58	2,076.38	2,072.51	2,065.66
6	2,067.26	2,064.79	2,062.97	2,063.01	2,064.59	2,065.13	2,066.33	2,068.13	2,076.63	2,076.33	2,072.27	2,065.41
7	2,067.25	2,064.68	2,063.09	2,063.02	2,064.64	2,065.12	2,066.44	2,068.52	2,076.64	2,076.30	2,072.04	2,065.15
8	2,067.21	2,064.56	2,062.99	2,063.04	2,064.66	2,065.16	2,066.56	2,068.81	2,076.65	2,076.29	2,071.79	2,064.89
9	2,067.20	2,064.44	2,063.02	2,063.06	2,064.69	2,065.20	2,066.67	2,068.96	2,076.65	2,076.30	2,071.55	2,064.59
10	2,067.19	2,064.33	2,063.06	2,063.07	2,064.72	2,065.25	2,066.80	2,069.17	2,076.61	2,076.30	2,071.33	2,064.33
11	2,067.18	2,064.20	2,063.14	2,063.07	2,064.75	2,065.30	2,066.85	2,069.59	2,076.56	2,076.28	2,071.14	2,064.07
12	2,067.11	2,064.09	2,063.16	2,063.08	2,064.80	2,065.33	2,066.82	2,070.11	2,076.50	2,076.22	2,070.96	2,063.81
13	2,066.99	2,063.96	2,063.08	2,063.08	2,064.86	2,065.38	2,066.77	2,070.56	2,076.48	2,076.15	2,070.78	2,063.54
14	2,066.88	2,063.84	2,063.00	2,063.07	2,064.88	2,065.39	2,066.71	2,070.97	2,076.51	2,076.08	2,070.59	2,063.31
15	2,066.77	2,063.73	2,062.89	2,063.07	2,064.89	2,065.36	2,066.65	2,071.49	2,076.55	2,076.00	2,070.42	2,063.11
16	2,066.65	2,063.63	2,062.79	2,063.07	2,064.91	2,065.39	2,066.67	2,073.08	2,076.58	2,075.91	2,070.22	2,062.95
17	2,066.53	2,063.51	2,062.67	2,063.15	2,064.93	2,065.42	2,066.77	2,074.73	2,076.61	2,075.83	2,070.03	2,062.78
18	2,066.41	2,063.41	2,062.55	2,063.23	2,064.95	2,065.42	2,066.81	2,075.46	2,076.63	2,075.74	2,069.86	2,062.62
19	2,066.28	2,063.33	2,062.51	2,063.32	2,065.01	2,065.41	2,066.82	2,075.64	2,076.65	2,075.65	2,069.67	2,062.46
20	2,066.17	2,063.29	2,062.51	2,063.43	2,065.07	2,065.40	2,066.84	2,076.07	2,076.66	2,075.56	2,069.50	2,062.30
21	2,066.09	2,063.25	2,062.52	2,063.53	2,065.10	2,065.37	2,066.86	2,076.37	2,076.67	2,075.42	2,069.31	2,062.17
22	2,066.04	2,063.23	2,062.56	2,063.62	2,065.14	2,065.39	2,066.89	2,076.38	2,076.65	2,075.24	2,069.12	2,062.05
23	2,065.95	2,063.21	2,062.59	2,063.70	2,065.17	2,065.38	2,066.91	2,076.40	2,076.64	2,075.08	2,068.92	2,061.92
24	2,065.87	2,063.19	2,062.63	2,063.79	2,065.19	2,065.37	2,066.95	2,076.46	2,076.63	2,074.90	2,068.74	2,061.79
25	2,065.80	2,063.17	2,062.65	2,063.86	2,065.21	2,065.35	2,067.03	2,076.58	2,076.61	2,074.74	2,068.51	2,061.67
26	2,065.69	2,063.15	2,062.69	2,063.94	2,065.23	2,065.38	2,067.08	2,076.60	2,076.59	2,074.57	2,068.26	2,061.55
27	2,065.61	2,063.13	2,062.71	2,064.03	2,065.24	2,065.37	2,067.11	2,076.64	2,076.59	2,074.41	2,068.00	2,061.43
28	2,065.53	2,063.09	2,062.72	2,064.11	2,065.22	2,065.49	2,067.15	2,076.69	2,076.60	2,074.25	2,067.74	2,061.34
29	2,065.45	2,063.05	2,062.81	2,064.19	---	2,065.61	2,067.22	2,076.68	2,076.60	2,074.08	2,067.47	2,061.30
30	2,065.39	2,063.04	2,062.85	2,064.26	---	2,065.69	2,067.29	2,076.62	2,076.57	2,073.90	2,067.21	2,061.25
31	2,065.31	---	2,062.89	2,064.31	---	2,065.81	---	2,076.52	---	2,073.68	2,066.96	---
MAX	2,067.37	2,065.24	2,063.16	2,064.31	2,065.24	2,065.81	2,067.29	2,076.69	2,076.67	2,076.54	2,073.44	2,066.71
MIN	2,065.31	2,063.04	2,062.51	2,062.93	2,064.37	2,065.12	2,065.82	2,067.35	2,076.48	2,073.68	2,066.96	2,061.25
(†)	4,630	4,330	4,310	4,500	4,620	4,690	4,900	6,250	6,260	5,820	4,850	4,100
(‡)	-280	-300	-20	+190	+120	+70	+210	+1,350	+10	-440	-970	-750

CAL YR2004 MAX 2,080.54 MIN 2,060.27 AC-FT‡ +330
WTR YR2005 MAX 2,076.69 MIN 2,061.25 AC-FT‡ -810

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

WILLOW CREEK BASIN

14034500 WILLOW CREEK AT HEPPNER, OR

LOCATION.--Lat 45°21'02", long 119°32'56", in SE ¼ NW ¼ sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank at Heppner, 100 ft upstream from Court Street bridge, 800 ft southeast of Morrow County courthouse, 0.2 mi downstream from Willow Creek Dam and at mile 52.2.

DRAINAGE AREA.--96.8 mi².

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Concrete control since September 1985. Datum of gage is 1,952.73 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good except those below 2 ft³/s, which are fair. Flow regulated by Willow Creek Lake, 0.2 mi upstream, since Feb. 16, 1983. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Continuous water-quality records for the period February 1963 to June 1968 and March 1972 to September 1973 have been collected at this location. Chemical analysis October 1984 to September 1987.

AVERAGE DISCHARGE.--31 years (water years 1952-82), 19.1 ft³/s, 13,840 acre-ft/yr. 23 years (water years 1983-2005), 21.0 ft³/s, 15,220 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 812 ft³/s May 10, 1957, gage height, 6.15 ft, from rating curve extended above 230 ft³/s; maximum gage height, 6.46 ft May 25, 1971, backwater from Shobe Canyon; minimum discharge, no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, slope-area measurement of peak flow (see WSP 96). Discharge for flood of Feb. 22, 1949, was 1,700 ft³/s, slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70 ft³/s May 18, 19, 21, 22, gage height, 3.97 ft; minimum discharge, 1.5 ft³/s Sept. 28.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	7.9	5.1	2.3	3.1	9.4	4.0	8.4	17	3.9	15	15
2	2.5	7.9	4.8	2.2	2.9	9.4	3.9	8.4	15	3.9	15	15
3	2.5	9.2	3.7	2.2	2.8	8.3	3.9	8.2	15	3.9	15	15
4	2.5	11	3.9	2.3	2.9	6.9	3.9	8.1	13	3.9	15	15
5	2.5	11	4.0	2.3	2.9	6.8	3.8	8.2	11	3.9	15	15
6	2.8	11	4.0	2.3	2.9	6.7	3.6	7.4	11	3.3	15	15
7	3.2	11	4.0	2.3	2.7	4.1	3.6	7.4	11	2.7	15	15
8	3.2	11	4.0	2.3	2.7	2.7	3.6	17	11	2.7	15	15
9	3.2	11	4.0	2.6	2.7	2.7	3.5	24	11	2.7	15	15
10	3.0	11	4.0	3.0	2.7	3.0	3.5	21	11	2.7	13	15
11	2.9	11	4.1	3.0	2.7	3.0	8.4	20	11	3.1	11	15
12	5.2	11	8.0	3.0	2.7	3.0	11	17	11	4.6	11	15
13	8.4	11	12	3.0	2.7	2.8	11	17	8.9	5.7	11	15
14	8.4	11	12	3.0	2.7	5.6	11	17	4.0	5.7	11	13
15	8.4	10	12	3.0	2.8	5.0	11	17	4.0	5.7	11	10
16	8.4	11	12	3.0	2.8	4.2	7.1	16	4.0	5.7	11	9.2
17	8.4	11	12	2.8	2.8	4.2	4.4	16	4.1	5.7	11	9.2
18	8.6	11	12	2.8	2.8	4.2	7.6	49	4.1	5.8	11	9.2
19	8.7	8.4	7.8	2.5	2.8	4.2	9.4	66	4.0	7.4	11	9.2
20	8.7	5.3	5.1	2.5	2.8	4.1	8.7	39	4.3	8.2	11	8.8
21	8.7	5.3	4.0	2.5	2.8	4.1	8.6	53	3.9	9.6	11	6.9
22	8.7	5.3	2.5	2.6	2.7	4.1	8.2	68	3.9	11	11	6.2
23	8.7	5.3	2.5	2.6	2.7	4.2	8.2	60	4.0	11	11	6.2
24	8.7	5.3	2.5	2.6	3.7	4.2	8.1	49	4.0	11	11	6.2
25	8.7	5.3	2.5	2.6	4.2	4.2	8.1	38	4.0	11	13	6.2
26	8.7	5.3	2.5	2.4	4.5	4.2	8.1	38	4.0	11	15	6.2
27	8.7	5.3	2.4	2.3	4.5	4.2	8.1	29	4.0	11	15	6.2
28	8.6	5.2	2.3	2.3	8.3	4.2	8.1	24	4.0	11	15	4.5
29	7.9	5.1	2.3	2.3	---	4.2	8.3	24	3.9	11	15	2.6
30	7.9	5.1	2.3	2.2	---	4.1	8.4	24	3.9	12	15	2.9
31	7.9	---	2.3	2.8	---	4.0	---	24	---	14	15	---
TOTAL	197.2	255.2	166.6	79.6	89.3	146.0	209.1	823.1	225.0	214.8	405	317.7
MEAN	6.36	8.51	5.37	2.57	3.19	4.71	6.97	26.6	7.50	6.93	13.1	10.6
MAX	8.7	11	12	3.0	8.3	9.4	11	68	17	14	15	15
MIN	2.5	5.1	2.3	2.2	2.7	2.7	3.5	7.4	3.9	2.7	11	2.6
AC-FT	391	506	330	158	177	290	415	1,630	446	426	803	630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2005, BY WATER YEAR (WY)

MEAN	6.80	11.9	13.3	23.1	30.4	46.8	43.7	42.1	18.4	6.29	5.64	4.42
MAX	15.6	26.3	48.3	110	110	115	152	127	54.2	11.5	15.2	12.4
(WY)	(1994)	(1997)	(1997)	(1997)	(1996)	(1983)	(1984)	(1995)	(1984)	(2003)	(2004)	(1988)
MIN	1.93	1.69	2.54	2.57	3.19	4.40	6.97	2.15	2.17	2.39	2.34	2.56
(WY)	(1992)	(1992)	(2004)	(2005)	(2005)	(2002)	(2005)	(1992)	(1992)	(1987)	(1983)	(1991)

WILLOW CREEK BASIN

14034500 WILLOW CREEK AT HEPPNER, OR—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1983 - 2005	
ANNUAL TOTAL	7,069.8		3,128.6		21.0	
ANNUAL MEAN	19.3		8.57		45.5	
HIGHEST ANNUAL MEAN					1984	
LOWEST ANNUAL MEAN					2002	
HIGHEST DAILY MEAN	157	May 27	68	May 22	306	May 6, 1983
LOWEST DAILY MEAN	2.2	Jan 14	2.2	Jan 2	0.48	Aug 4, 1983
ANNUAL SEVEN-DAY MINIMUM	2.4	Dec 25	2.3	Dec 28	1.3	Aug 1, 1983
ANNUAL RUNOFF (AC-FT)	14,020		6,210		15,220	
10 PERCENT EXCEEDS	46		15		51	
50 PERCENT EXCEEDS	11		6.2		8.9	
90 PERCENT EXCEEDS	3.0		2.6		2.8	



2005 Water Year
 WILLOW CREEK BASIN
 14034500 WILLOW CREEK AT HEPPNER, OR

Latitude: 45° 21 ' 02"
 Morrow County

Longitude: 119° 32 ' 56"
 Datum: 1952.73 feet

Hydrologic Unit Code: 17070104
 Drainage Area: 96.8 mi²

