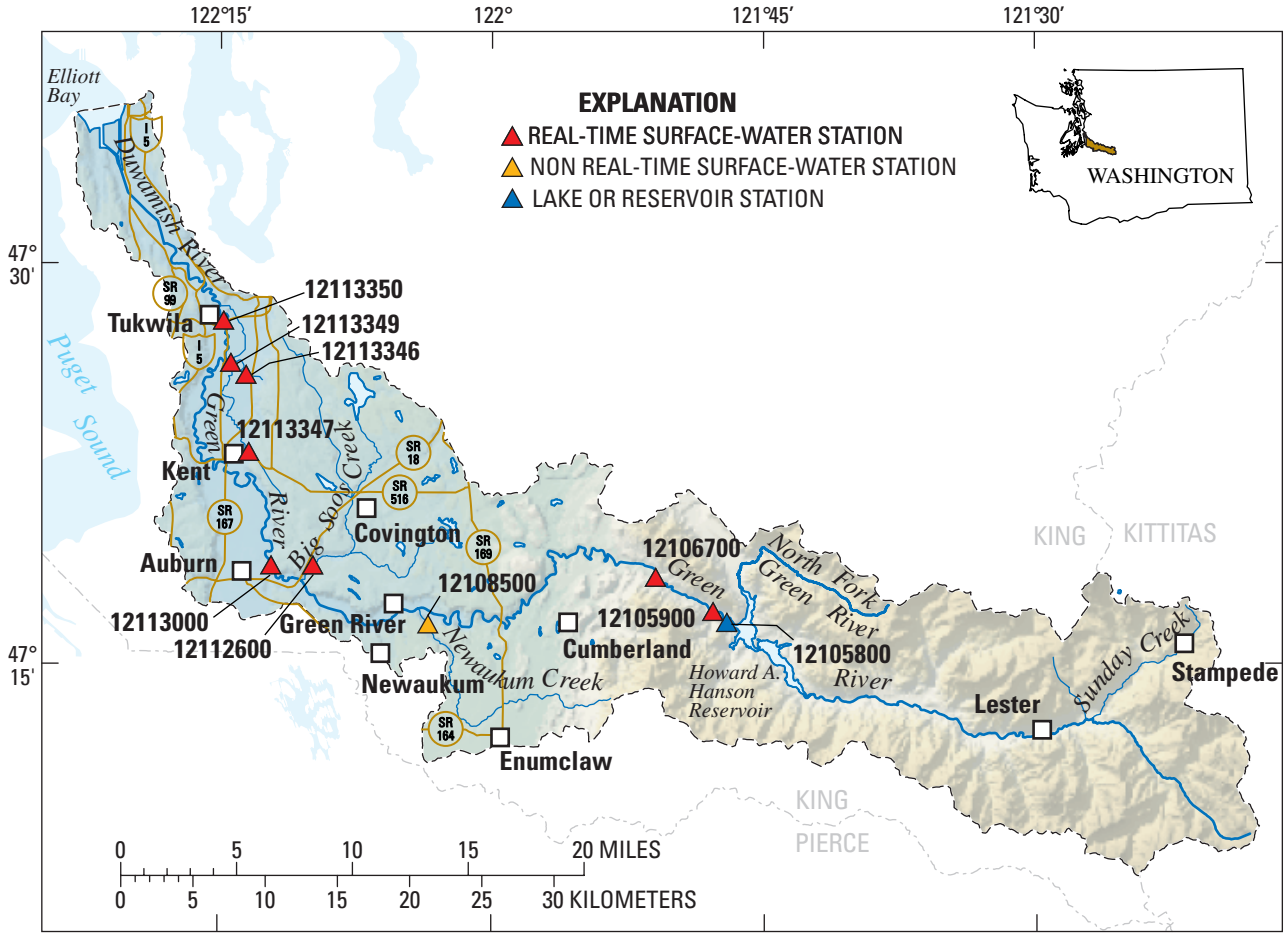

Figure 30. Location of surface-water stations in the Duwamish River Basin.

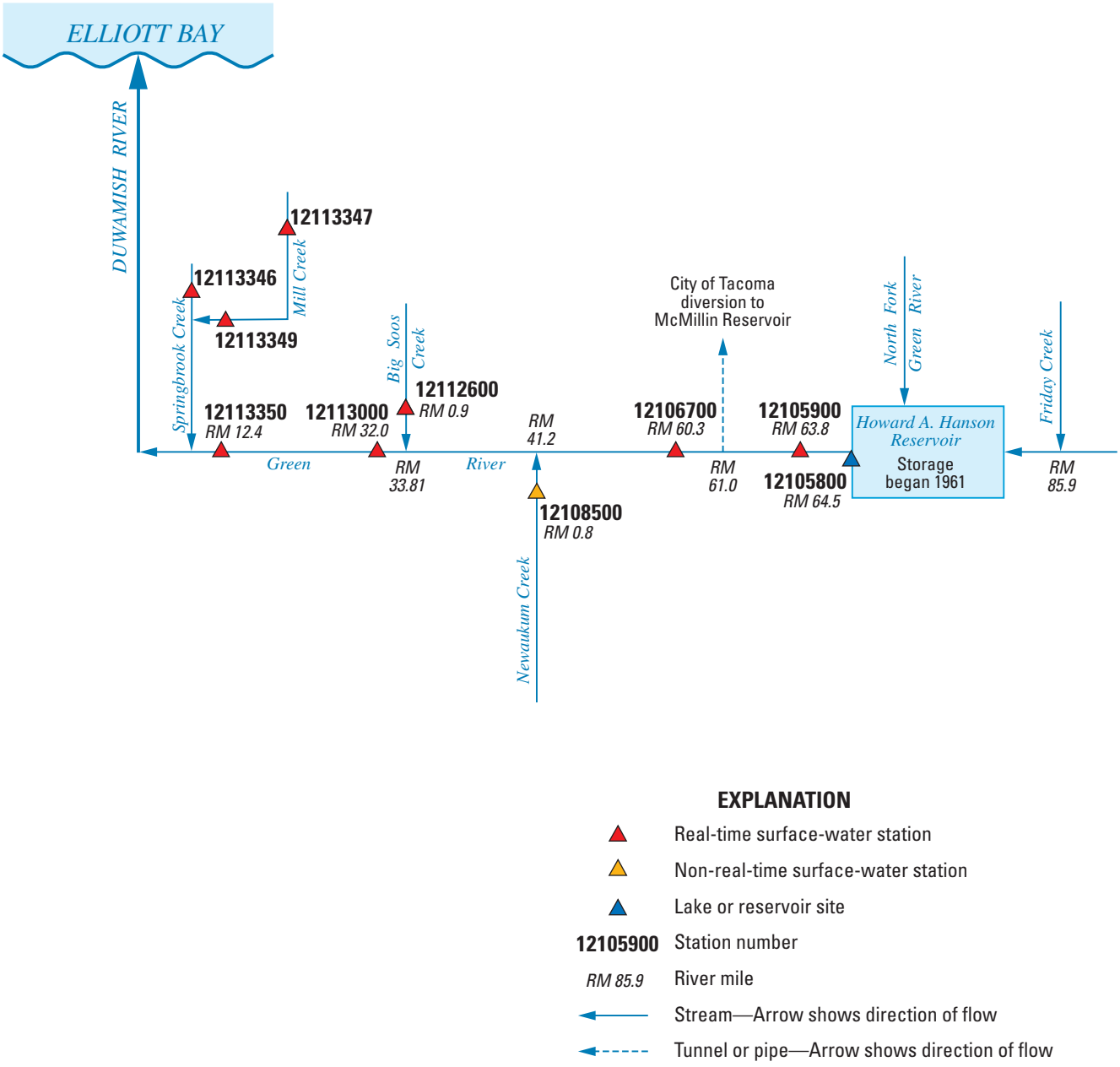

Figure 31. Schematic diagram showing surface-water stations in the Duwamish River Basin.

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE¼SE¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure, just upstream from Howard A. Hanson Dam on Green River, 1.4 mi upstream from Bear Creek, 5.1 mi southeast of Palmer, and at mile 64.5.

DRAINAGE AREA.--220 mi^2, approximately.

PERIOD OF RECORD.--December 1961 to current year.

REVISED RECORDS.--WDR WA-96-1: 1985-1995 maximum and minimum contents.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929, supplementary adjustment of 1947.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity, 105,463 acre-ft between elevations 1,035 ft, invert of outlet tunnel, and 1,206 ft, top of spillway gates. Retained during initial flood conditions, storage is released as soon as possible after a flood to attenuate flows downstream and to maintain reservoir capacity for possible future floods. Storage is used during summer months to augment the natural river flow.

COOPERATION.--Elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 68,811 acre-ft, Feb. 10, 1996, elevation, 1,182.0 ft; minimum contents observed, 34 acre-ft, Nov. 2, 1962, elevation, 1,037.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 33,533 acre-ft, June 12, 13, elevation, 1,150.6 ft; minimum contents, 405 acre-ft, Nov. 24, elevation, 1,059.4 ft.

CAPACITY TABLE
(Based on conic method by Corps of Engineers in 1984)

Elevation (feet)	Contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Elevation (feet)	Contents (acre-feet)
1,045	13	1,080	2,422	1,140	24,622
1,050	64	1,090	4,081	1,150	32,982
1,055	201	1,100	6,313	1,160	42,804
1,060	439	1,110	9,271	1,170	53,902
1,065	777	1,120	13,140	1,180	66,186
1,070	1,220	1,130	18,126	1,190	79,912

RESERVOIR STORAGE, ACRE FEET
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12,036	1,979	1,929	2,095	2,228	2,366	16,873	31,185	33,074	32,710	31,453	24,328
2	11,470	1,583	2,004	2,108	1,818	2,366	18,126	30,483	32,982	32,710	31,185	24,108
3	10,965	1,605	1,941	2,056	1,916	2,451	19,280	30,395	32,982	32,620	31,009	23,817
4	10,402	1,482	1,830	2,082	1,941	2,580	20,381	30,395	32,982	32,530	31,009	23,531
5	9,897	1,515	1,929	2,043	1,929	2,699	21,145	30,483	33,074	32,439	30,834	23,245
6	9,443	1,710	1,992	2,056	2,095	2,806	21,539	30,658	33,166	32,439	30,570	22,965
7	9,104	1,954	1,954	1,954	2,241	2,899	21,937	30,746	33,166	32,349	30,395	22,688
8	8,612	2,030	2,082	1,954	1,954	2,993	22,688	30,834	33,166	32,258	30,134	22,411
9	8,390	2,056	1,322	1,954	1,818	3,025	23,388	30,834	33,166	32,620	29,874	22,073
10	8,233	1,967	1,302	1,929	1,698	3,057	23,817	31,274	33,074	32,892	29,615	21,802
11	8,018	1,992	1,891	1,867	1,769	3,106	24,402	31,542	32,982	33,074	29,442	21,736
12	7,747	1,929	3,041	1,781	1,867	3,187	25,074	31,631	33,442	33,074	29,186	21,539
13	7,454	2,004	3,155	1,722	2,004	3,288	25,530	31,720	33,533	32,982	28,846	21,276
14	7,141	2,069	2,338	1,663	2,082	3,372	25,839	31,809	33,258	32,892	28,590	20,953
15	6,838	2,082	2,188	1,793	1,867	3,476	25,917	31,899	33,166	32,801	28,340	20,633
16	6,572	1,992	1,867	1,992	1,941	3,582	26,149	32,167	32,982	32,801	28,090	20,194
17	7,483	1,979	1,769	2,255	2,017	3,781	27,023	32,349	32,982	32,710	27,839	19,763
18	7,687	1,979	1,941	5,164	2,121	3,986	27,756	32,349	32,982	32,620	27,593	19,340
19	6,976	2,017	1,967	14,276	2,214	4,159	27,839	32,349	32,801	32,530	27,349	18,871
20	5,987	2,004	1,967	12,621	2,282	4,357	28,006	32,258	32,710	32,439	27,105	18,410
21	5,097	1,967	1,941	8,644	2,310	4,561	28,340	32,439	32,620	32,349	26,783	17,960
22	4,603	1,967	1,992	4,297	2,324	4,771	28,675	32,710	32,710	32,258	26,466	17,518
23	4,199	2,017	1,891	2,978	2,366	4,921	29,272	32,982	32,801	32,349	26,228	17,031
24	3,762	916	1,992	3,025	2,394	5,097	30,134	32,982	32,801	32,349	25,917	16,556
25	3,372	1,560	1,992	2,654	2,408	5,232	30,570	32,892	32,801	32,258	25,607	16,089
26	3,221	1,461	1,967	2,352	2,408	5,415	30,834	32,892	32,892	32,258	25,300	15,583
27	2,993	1,439	1,842	2,174	2,394	6,811	31,009	32,892	32,892	32,167	24,998	14,990
28	2,760	1,842	1,992	2,043	2,366	9,932	31,097	33,074	32,892	32,077	24,697	14,323
29	2,640	1,818	1,954	2,310	---	12,621	31,097	33,166	32,801	31,988	24,402	13,631
30	2,494	1,571	1,929	2,479	---	14,702	31,185	33,166	32,801	31,809	24,549	15,138
31	2,241	---	2,030	2,565	---	16,038	---	33,166	---	31,631	24,475	---
MEAN	6,704	1,816	1,998	3,254	2,099	4,956	25,831	31,926	32,989	32,483	27,996	19,750
MAX	12,036	2,082	3,155	14,276	2,408	16,038	31,185	33,166	33,533	33,074	31,453	24,328
MIN	2,241	916	1,302	1,663	1,698	2,366	16,873	30,395	32,620	31,631	24,402	13,631
††	1,077.4	1,075.1	1,077.5	1,079.5	1,079.6	1,127.2	1,148.0	1,150.1	1,149.7	1,148.4	1,139.7	1,123.4
†	2,069	1,781	2,082	2,351	2,365	16,607	31,185	33,073	32,709	31,540	24,400	14,701
‡	-10,130	-288	+301	+269	+14	+14,242	+14,578	+1,888	-364	-1,169	-7,140	-9,699

CAL YR 2004 MEAN 12,476 MAX 30,000 MIN 916 AC-FT -396
WTR YR 2005 MEAN 16,053 MAX 33,533 MIN 916 AC-FT +2,502

† † Monthend elevation, in feet, at 2400 hours.
† Monthend contents, in acre-feet.
‡ Change in Contents, in acre-feet.

12105900 GREEN RIVER BELOW HOWARD A. HANSON RESERVOIR, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE¼NW¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi upstream from Bear Creek, 0.7 mi downstream from Howard A. Hanson Dam, 5.0 mi southeast of Palmer, and at mile 63.8.

DRAINAGE AREA.--221 mi^2.

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 990 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow.

AVERAGE DISCHARGE.--45 years (water years 1961-2005), 985 ft^3/s, 60.53 in/yr, 713,600 acre-ft/yr, adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft^3/s, Feb. 21, 1961, gage height, 14.40 ft; minimum discharge, 87 ft^3/s, Dec. 29, 1961, gage height, 3.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,470 ft^3/s, Jan. 18, gage height, 11.76 ft; minimum discharge, 187 ft^3/s, Mar. 24, gage height, 4.01 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	610	747	830	550	955	345	711	823	560	360	276	293
2	604	1,290	856	550	741	321	719	766	524	360	275	300
3	599	1,570	851	510	626	272	728	632	487	359	275	308
4	575	1,210	777	484	685	256	785	545	423	359	274	308
5	555	924	733	461	622	258	867	509	423	338	279	308
6	551	749	735	477	551	259	870	491	423	380	281	308
7	546	673	733	486	671	261	873	456	436	370	281	312
8	524	660	1,250	426	677	275	880	457	459	311	286	314
9	495	645	1,370	426	612	284	885	442	473	297	289	322
10	492	585	3,080	425	531	276	818	578	454	297	289	328
11	489	555	4,040	421	460	253	701	683	420	356	289	327
12	485	497	3,130	417	453	236	703	663	635	390	288	329
13	483	439	2,420	397	458	238	704	625	833	379	287	333
14	479	441	2,060	309	541	227	742	625	805	366	287	337
15	475	485	1,860	223	479	211	771	628	735	344	287	362
16	478	473	1,550	227	397	206	773	701	677	333	287	391
17	764	456	1,280	939	386	193	776	806	630	332	287	399
18	1,180	491	1,150	5,370	371	194	951	868	629	313	287	397
19	1,350	488	1,150	6,140	375	196	1,000	883	629	295	287	395
20	1,210	476	1,110	5,450	375	198	866	826	559	287	286	393
21	1,010	448	1,010	4,900	377	198	801	736	476	287	286	391
22	913	432	971	3,400	361	196	772	736	457	272	290	390
23	896	779	861	1,960	341	196	776	806	456	256	294	396
24	878	1,500	795	1,670	347	194	884	826	437	256	295	398
25	774	2,750	795	1,530	346	189	1,010	748	413	256	295	396
26	706	2,600	792	1,310	345	193	1,010	658	413	256	295	440
27	675	1,680	672	1,150	345	203	952	578	413	256	294	486
28	607	1,300	645	915	345	302	880	511	413	256	294	493
29	574	1,190	668	791	---	527	856	513	413	268	295	546
30	638	961	612	800	---	668	889	509	378	276	294	1,920
31	655	---	547	908	---	702	---	554	---	276	293	---
TOTAL	21,270	27,494	39,333	44,022	13,773	8,527	24,953	20,182	15,483	9,741	8,902	12,620
MEAN	686	916	1,269	1,420	492	275	832	651	516	314	287	421
MAX	1,350	2,750	4,040	6,140	955	702	1,010	883	833	390	295	1,920
MIN	475	432	547	223	341	189	701	442	378	256	274	293
AC-FT	42,190	54,530	78,020	87,320	27,320	16,910	49,490	40,030	30,710	19,320	17,660	25,030
MEAN†	521	912	1,273	1,424	492	506	1,077	682	510	295	171	258
CFSM†	2.36	4.13	5.76	6.44	2.23	2.29	4.87	3.09	2.31	1.33	0.77	1.17
IN.†	2.72	4.60	6.64	7.43	2.32	2.64	5.44	3.56	2.57	1.54	0.89	1.30
AC-FT†	32,060	54,240	78,320	87,590	27,330	31,150	64,070	41,920	30,350	18,150	10,520	15,330

CAL YR 2004 TOTAL 316,852 MEAN 866 MAX 4,770 MIN 204 AC-FT 628,500 MEAN† 866 CFSM† 3.92 IN.† 53.29 AC-FT† 628,100
WTR YR 2005 TOTAL 246,300 MEAN 675 MAX 6,140 MIN 189 AC-FT 488,500 MEAN† 678 CFSM† 3.07 IN.† 41.66 AC-FT† 491,000

† Adjusted for change in contents in Howard A. Hanson Reservoir.

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE¼SE¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at City of Tacoma purification plant, 0.7 mi downstream from diversion dam, 2 mi southeast of Palmer, and at mile 60.3.

DRAINAGE AREA.--231 mi^2.

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 859.53 ft above NGVD of 1929. Prior to Oct. 1, 1987, water-stage recorder at site 0.1 mi upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 4.1 mi upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 80 ft^3/s upstream from station for municipal supply, of which a small amount is returned to the river 300 ft upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1964-2005), 940 ft^3/s, 681,000 acre-ft/yr, unadjusted. The figure for acre-ft/yr, published in the 2004 report was in error; the correct figure is 686,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft^3/s, Feb. 12, 1981, gage height, 12.05 ft, at site then in use; minimum discharge, 20 ft^3/s, part or all of each day, Oct. 26, 27, Nov. 3, 4, 6, 1974, gage height, 3.90 ft, at site then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, had a discharge of 27,800 ft^3/s, on basis of slope-area measurement at site 0.5 mi downstream from present gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,810 ft^3/s, Jan. 18, gage height, 10.03 ft; minimum discharge, 131 ft^3/s, Mar. 25, gage height, 2.94 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	504	608	826	468	856	279	775	797	537	250	162	177
2	448	1,430	812	467	701	259	792	749	499	245	162	183
3	434	1,830	792	428	566	208	789	619	462	241	161	190
4	403	1,420	726	414	636	189	829	533	391	239	160	191
5	363	1,060	676	366	596	188	897	489	392	227	162	192
6	358	803	669	363	486	190	884	460	392	302	165	189
7	405	602	671	377	587	186	881	413	404	275	164	190
8	462	584	1,280	315	602	230	882	412	425	232	170	196
9	334	560	1,470	314	540	292	877	403	440	231	174	203
10	296	501	3,090	345	478	261	816	528	423	225	175	223
11	296	466	4,110	412	408	190	726	637	394	261	173	212
12	293	405	3,090	408	389	175	782	625	614	288	174	211
13	293	331	2,330	389	393	175	778	601	799	277	173	213
14	306	331	2,000	263	465	172	807	604	724	260	173	222
15	307	381	1,820	158	418	160	798	618	625	273	172	242
16	386	375	1,500	156	328	164	821	701	596	227	171	269
17	804	348	1,210	861	316	142	836	801	532	224	172	277
18	1,280	432	1,050	5,530	300	143	969	856	527	207	166	275
19	1,440	418	1,030	5,970	303	147	1,010	865	517	189	169	275
20	1,250	388	989	5,240	304	149	872	814	445	184	170	272
21	971	349	896	4,690	304	157	785	722	363	181	165	277
22	845	329	862	3,300	292	146	753	723	350	171	169	270
23	826	759	767	1,890	273	146	766	780	352	152	177	271
24	786	1,810	698	1,580	278	144	857	795	326	152	179	272
25	653	3,090	698	1,450	278	138	975	718	296	151	181	271
26	574	2,710	696	1,240	277	164	983	632	295	150	177	306
27	536	1,770	590	1,100	276	280	928	547	296	150	175	350
28	431	1,350	555	877	279	398	852	466	296	151	174	357
29	391	1,210	583	719	---	645	816	464	296	158	184	466
30	460	961	535	707	---	767	865	462	272	168	232	2,090
31	484	---	467	806	---	759	---	516	---	163	179	---
TOTAL	17,619	27,611	37,488	41,603	11,929	7,643	25,401	19,350	13,280	6,604	5,360	9,332
MEAN	568	920	1,209	1,342	426	247	847	624	443	213	173	311
MAX	1,440	3,090	4,110	5,970	856	767	1,010	865	799	302	232	2,090
MIN	293	329	467	156	273	138	726	403	272	150	160	177
AC-FT	34,950	54,770	74,360	82,520	23,660	15,160	50,380	38,380	26,340	13,100	10,630	18,510

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2005, BY WATER YEAR (WY)

MEAN	470	1,235	1,519	1,582	1,432	1,143	1,299	1,224	693	315	161	239
MAX	1,198	4,074	4,591	3,225	3,481	3,801	2,376	2,605	2,514	809	306	757
(WY)	(1996)	(1991)	(1976)	(1984)	(1982)	(1972)	(1985)	(1972)	(1974)	(1972)	(1974)	(1968)
MIN	66.2	82.7	251	399	367	247	286	381	129	118	98.6	109
(WY)	(1975)	(1988)	(2003)	(1979)	(1969)	(2005)	(1992)	(1994)	(1987)	(1965)	(1969)	(1979)

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1963 - 2005	
ANNUAL TOTAL	295,022		223,220			
ANNUAL MEAN	806		612		940	
HIGHEST ANNUAL MEAN					1,562	1972
LOWEST ANNUAL MEAN					573	2001
HIGHEST DAILY MEAN	4,960	Jan 29	5,970	Jan 19	10,900	Dec 5, 1977
LOWEST DAILY MEAN	112	Aug 12	138	Mar 25	20	Nov 4, 1974
ANNUAL SEVEN-DAY MINIMUM	114	Aug 11	147	Mar 19	22	Oct 21, 1974
ANNUAL RUNOFF (AC-FT)	585,200		442,800		681,000	
10 PERCENT EXCEEDS	1,510		1,020		2,020	
50 PERCENT EXCEEDS	636		408		604	
90 PERCENT EXCEEDS	182		171		134	

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW¼SW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi downstream from West Whitney Hill bridge, 0.8 mi upstream from mouth, and 3.5 mi southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi^2.

PERIOD OF RECORD.--July 1944 to November 1950, water years 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WDR WA-74-1: 1973(M). WDR WA-76-1: 1975. WDR WA-00-1: 1999 (m).

GAGE.--Water-stage recorder. Elevation of gage is 310 ft above NGVD of 1929, from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Records good except for those above 80 ft^3/s, which are fair, and those above 200 ft^3/s and estimated daily discharges, which are poor. Many small diversions upstream from station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--59 years (water years 1945-50, 1953-2005), 58.8 ft^3/s, 29.16 in/yr, 42,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,640 ft^3/s, Feb. 8, 1996, gage height, 3.95 ft, from rating curve extended above 1,260 ft^3/s; minimum discharge, 8.0 ft^3/s, Oct. 13, 14, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 18	1730	*416	*2.89

Date	Time	Discharge (ft^3/s)	Gage height (ft)
No other peak greater than base discharge.			

Minimum discharge, 9.8 ft^3/s, Sept. 27, 28, gage height, 1.52 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	12	23	87	44	e51	29	67	56	34	28	18	16
2	12	59	68	39	50	25	75	48	42	27	18	15
3	13	81	56	37	48	23	69	50	35	26	18	15
4	12	50	51	35	52	23	70	46	34	25	17	14
5	13	39	54	33	51	22	57	44	33	24	17	15
6	18	35	52	33	54	21	51	41	35	31	17	15
7	19	32	62	36	66	22	53	38	34	29	17	14
8	25	29	88	35	50	22	63	36	38	28	17	14
9	46	27	102	33	41	22	50	39	33	36	16	14
10	24	26	119	32	45	21	44	76	31	31	16	22
11	19	25	166	31	45	20	54	70	33	30	16	23
12	17	e24	143	32	43	19	62	56	47	29	16	16
13	15	e25	98	31	43	20	50	48	43	28	16	15
14	15	e25	106	30	41	22	45	48	38	27	15	14
15	14	e28	100	29	40	22	46	56	36	26	15	14
16	30	e32	77	41	38	23	105	86	34	26	15	14
17	89	e33	69	94	37	27	116	80	66	26	17	14
18	78	e43	62	e317	35	25	77	72	49	24	17	14
19	52	e42	58	e331	35	22	64	65	38	23	15	13
20	39	34	53	e225	35	26	57	62	33	22	15	13
21	36	31	49	e150	34	26	49	60	31	22	15	12
22	38	30	46	e113	34	23	47	62	33	25	14	12
23	33	30	43	e95	34	20	44	56	36	26	14	12
24	30	70	43	e78	31	23	54	52	31	22	14	11
25	28	110	42	e69	30	24	49	47	30	21	14	11
26	26	103	41	e63	32	32	46	43	30	20	14	11
27	24	84	39	e63	31	136	42	38	34	20	14	11
28	23	75	38	e59	31	157	41	36	33	20	14	10
29	23	57	45	e53	---	133	52	34	31	19	18	12
30	24	74	56	e51	---	91	72	34	30	19	29	49
31	23	---	53	e50	---	65	---	34	---	19	19	---
TOTAL	870	1,376	2,166	2,362	1,157	1,186	1,771	1,613	1,085	779	507	455
MEAN	28.1	45.9	69.9	76.2	41.3	38.3	59.0	52.0	36.2	25.1	16.4	15.2
MAX	89	110	166	331	66	157	116	86	66	36	29	49
MIN	12	23	38	29	30	19	41	34	30	19	14	10
AC-FT	1,730	2,730	4,300	4,690	2,290	2,350	3,510	3,200	2,150	1,550	1,010	902
CFSM	1.02	1.67	2.55	2.78	1.51	1.40	2.15	1.90	1.32	0.92	0.60	0.55
IN.	1.18	1.87	2.94	3.21	1.57	1.61	2.40	2.19	1.47	1.06	0.69	0.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2005, BY WATER YEAR (WY)

MEAN	24.6	64.6	95.3	113	102	87.1	68.6	48.3	38.9	25.9	19.8	19.5
MAX	58.9	215	225	252	267	215	134	97.0	98.1	48.6	32.2	39.2
(WY)	(1956)	(1991)	(1956)	(1975)	(1996)	(1950)	(1991)	(1984)	(1990)	(1997)	(1976)	(1959)
MIN	9.42	9.99	11.2	37.4	34.4	38.3	31.0	31.0	20.7	15.2	11.1	10.5
(WY)	(1953)	(1953)	(1953)	(1977)	(1977)	(2005)	(2004)	(1992)	(1992)	(2003)	(2003)	(2003)

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1944 - 2005	
ANNUAL TOTAL	16,381		15,327			
ANNUAL MEAN	44.8		42.0		58.8	
HIGHEST ANNUAL MEAN					85.9	1956
LOWEST ANNUAL MEAN					33.7	2001
HIGHEST DAILY MEAN	298	Jan 30	331	Jan 19	1,670	Feb 9, 1996
LOWEST DAILY MEAN	11	Aug 1	10	Sep 28	8.3	Oct 11, 1952
ANNUAL SEVEN-DAY MINIMUM	11	Jul 29	11	Sep 22	8.3	Oct 11, 1952
ANNUAL RUNOFF (AC-FT)	32,490		30,400		42,600	
ANNUAL RUNOFF (CFSM)	1.63		1.53		2.15	
ANNUAL RUNOFF (INCHES)	22.24		20.81		29.16	
10 PERCENT EXCEEDS	93		74		115	
50 PERCENT EXCEEDS	32		34		40	
90 PERCENT EXCEEDS	13		15		16	

e Estimated

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW$^1/_4$, sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi upstream from fish hatchery, 2.7 mi east of Auburn, and at mile 0.9.

DRAINAGE AREA.--66.7 mi^2, excludes 3.67 mi^2 in vicinity of Youngs Lake (flow from which has been diverted to Cedar River since about 1935).

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 77.2 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. City of Seattle diverts probably less than 2 ft^3/s from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966, fish hatchery 0.5 mi upstream from station diverted up to 19 ft^3/s which was returned downstream from the station. U.S Geological Survey satellite telemeter at station. Chemical analyses October 1962 to September 1971, at site 1.0 mi upstream.

AVERAGE DISCHARGE.--39 years (water years 1967-2005), 122 ft^3/s, 24.95 in/yr, 88,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft^3/s, Feb. 9, 1996, gage height, 8.88 ft, estimated from slope-area measurement of peak flow; minimum discharge, 11 ft^3/s, Sept. 5, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 440 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 18	1700	*528	*4.98

Date	Time	Discharge (ft^3/s)	Gage height (ft)
No other peak greater than base discharge.			

Minimum discharge, 24 ft^3/s, Sept. 26-28; minimum gage height, 2.21 ft, Sept. 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	36	42	120	102	144	96	186	146	99	49	34	27
2	37	70	109	96	141	94	187	129	113	50	31	27
3	38	86	101	90	137	93	191	126	100	50	30	30
4	37	72	98	86	138	89	193	119	96	48	30	31
5	35	61	102	82	135	89	165	114	97	47	30	30
6	39	57	105	80	144	88	149	108	105	58	29	29
7	37	55	125	87	162	85	143	105	102	54	30	26
8	50	53	168	85	144	81	141	103	104	56	30	26
9	71	49	193	81	133	80	133	107	95	66	30	25
10	60	48	271	78	126	80	125	150	90	59	30	36
11	49	47	363	76	123	78	150	135	89	55	31	37
12	43	47	312	74	121	79	159	121	96	52	31	33
13	41	47	254	75	119	77	149	113	93	51	33	29
14	40	47	269	73	115	73	135	112	87	49	33	28
15	39	49	242	71	113	69	129	129	84	46	32	28
16	44	53	206	78	109	72	238	151	81	46	29	28
17	79	52	181	189	106	76	279	133	98	45	30	31
18	80	63	165	471	104	73	226	148	78	43	31	32
19	66	61	152	486	104	76	191	169	70	39	30	30
20	58	56	146	400	102	81	168	185	65	39	31	27
21	54	53	136	345	100	79	152	235	61	39	32	27
22	51	52	126	292	96	74	139	228	60	40	30	27
23	49	52	118	264	95	71	134	191	59	43	27	27
24	48	82	116	234	93	68	145	160	56	40	27	30
25	47	126	112	211	91	67	135	140	56	38	27	29
26	44	125	112	196	93	115	126	127	55	35	26	25
27	42	117	105	189	92	273	120	117	56	34	29	24
28	41	113	99	180	92	257	115	111	53	33	30	26
29	41	103	106	169	---	240	135	106	51	34	30	29
30	42	109	116	159	---	211	169	103	50	35	28	37
31	42	---	107	151	---	180	---	100	---	35	28	---
TOTAL	1,480	2,047	4,935	5,250	3,272	3,264	4,807	4,221	2,399	1,408	929	871
MEAN	47.7	68.2	159	169	117	105	160	136	80.0	45.4	30.0	29.0
MAX	80	126	363	486	162	273	279	235	113	66	34	37
MIN	35	42	98	71	91	67	115	100	50	33	26	24
AC-FT	2,940	4,060	9,790	10,410	6,490	6,470	9,530	8,370	4,760	2,790	1,840	1,730
CFSM	0.72	1.02	2.39	2.54	1.75	1.58	2.40	2.04	1.20	0.68	0.45	0.44
IN.	0.83	1.14	2.75	2.93	1.82	1.82	2.68	2.35	1.34	0.79	0.52	0.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2005, BY WATER YEAR (WY)

MEAN	43.2	109	208	246	237	204	153	96.6	70.7	43.8	32.5	33.0
MAX	90.9	433	401	535	555	453	343	174	150	78.6	46.8	57.9
(WY)	(1998)	(1991)	(1976)	(1997)	(1996)	(1972)	(1991)	(1984)	(1990)	(1997)	(1976)	(1978)
MIN	24.6	32.6	58.0	84.3	73.6	102	74.8	57.0	34.7	26.4	22.4	20.4
(WY)	(2003)	(2003)	(1977)	(1977)	(1977)	(2001)	(2004)	(1985)	(1992)	(1985)	(2003)	(1995)

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1967 - 2005	
ANNUAL TOTAL	34,821		34,883			
ANNUAL MEAN	95.1		95.6		122	
HIGHEST ANNUAL MEAN					195	1991
LOWEST ANNUAL MEAN					63.5	1977
HIGHEST DAILY MEAN	565	Jan 30	486	Jan 19	3,580	Feb 9, 1996
LOWEST DAILY MEAN	23	Aug 17	24	Sep 27	18	Sep 16, 1995
ANNUAL SEVEN-DAY MINIMUM	24	Aug 15	27	Sep 22	18	Sep 18, 1995
ANNUAL RUNOFF (AC-FT)	69,070		69,190		88,750	
ANNUAL RUNOFF (CFSM)	1.43		1.43		1.84	
ANNUAL RUNOFF (INCHES)	19.42		19.45		24.95	
10 PERCENT EXCEEDS	202		180		270	
50 PERCENT EXCEEDS	64		81		80	
90 PERCENT EXCEEDS	31		30		30	

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water Years 1963-1972, 1995-1998, August 2005 (discontinued).

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1996 to September 1998.
WATER TEMPERATURE: March 1996 to September 1998.

EXTREMES FOR PERIOD OF RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 162 microsiemens, Oct. 17, 1996, but may have been higher during periods of missing record; minimum, 69 microsiemens, Dec. 29, 1996, but may have been lower during periods of missing record.
WATER TEMPERATURE: Maximum, 22.0°C, July 28, 1998; minimum 2.5°C, Jan. 11, 1998.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Medium code	Instantaneous discharge, cfs (00061)	Sampling depth, meters (00098)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Sulfate water, fltrd, mg/L (00945)	Mercury water fltrd, ng/L (50287)
AUG													
25...	1310	9	27	.33	762	10.4	104	8.1	148	26.9	15.5	6.5	.33
25...	1310	H	--	.01	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005—CONTINUED

Date	Mercury suspnd sedimnt total, ng/L (62976)	Mercury solids, total, ng/g (62978)	Methylmercury water fltrd, ng/L (50285)	Methylmercury suspnd sedimnt total, ng/L (62977)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
AUG						
25...	.218	--	.04	<.014	--	3
25...	--	14.1	--	--	6	--

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW¼NW¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi east of Auburn, 1.8 mi downstream from Big Soos Creek, and at mile 32.0.

DRAINAGE AREA.--399 mi^2, excludes 3.67 mi^2 in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--Records good except estimated daily discharges, which are fair. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 32.5 mi upstream from station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 80 ft^3/s from river at headworks near Palmer, 29 mi upstream from station, for municipal use. Minor diversions on upstream tributaries for domestic use. U.S. Geological Survey satellite telemeter at station. Water temperatures March 1952 to September 1986.

AVERAGE DISCHARGE.--44 years (water years 1962-2005), 1,316 ft^3/s, 953,000 acre-ft/yr, regulated. 25 years (water years 1937-61), 1,346 ft^3/s, 974,500 acre-ft/yr, unregulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft^3/s, Nov. 23, 1959, elevation, 69.75 ft; minimum discharge, 81 ft^3/s, Sept. 23, 1952; minimum elevation, 52.76 ft, Oct. 22, 29-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 18	1730	*8,500	*61.33

No other peak greater than base discharge.

Minimum discharge, 272 ft^3/s, Aug. 27, elevation, 53.19 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	752	766	1,300	864	1,330	523	1,230	1,210	828	e510	320	282
2	723	1,380	1,260	843	1,240	516	1,250	1,150	814	e505	313	278
3	699	2,050	1,190	814	1,000	464	1,250	1,010	774	e494	308	291
4	673	1,740	1,170	742	1,010	421	1,260	892	669	e482	303	293
5	641	1,370	1,080	739	1,100	407	1,300	820	654	e477	300	299
6	634	1,130	1,080	660	927	407	1,270	783	666	e538	302	291
7	621	896	1,120	751	988	401	1,250	703	667	586	300	283
8	778	861	1,490	646	1,060	389	1,270	687	691	e535	296	288
9	776	818	2,130	627	948	481	1,230	696	692	e530	300	288
10	636	785	3,350	617	898	496	1,200	838	679	e490	299	352
11	597	717	5,380	698	795	412	1,100	1,020	644	483	298	356
12	585	698	4,710	698	740	370	1,180	980	744	543	295	327
13	562	602	3,350	691	734	356	1,150	926	1,080	534	296	321
14	572	584	3,090	627	746	352	1,130	926	1,100	505	291	322
15	570	602	2,760	455	814	331	1,170	972	983	e480	289	328
16	644	651	2,370	442	649	336	1,420	1,110	952	456	285	368
17	981	608	2,000	882	627	336	1,520	1,210	980	448	295	385
18	1,470	696	1,680	6,050	595	308	1,440	1,310	916	435	292	388
19	1,680	733	1,610	8,420	588	310	1,540	1,340	877	396	283	384
20	1,540	674	1,570	e7,500	582	324	1,330	1,360	831	377	283	378
21	1,340	635	1,440	e6,600	574	329	1,200	1,250	706	369	283	381
22	1,160	600	1,350	5,170	567	319	1,110	1,250	663	381	277	376
23	1,130	637	1,300	3,110	532	302	1,110	1,200	669	358	276	372
24	1,100	1,790	1,150	2,420	524	297	1,180	1,230	e640	338	281	382
25	1,030	2,940	1,140	2,280	521	289	1,330	1,130	594	329	280	380
26	889	3,660	1,130	1,960	517	371	1,350	1,000	584	320	281	378
27	886	2,500	1,070	1,780	515	854	1,290	919	e580	315	275	437
28	790	1,860	937	1,560	515	1,010	1,210	778	e580	313	278	462
29	722	1,660	1,000	1,270	---	1,180	1,180	752	573	310	287	491
30	735	1,520	1,020	1,200	---	1,290	1,350	743	565	324	361	1,500
31	796	---	891	1,220	---	1,200	---	751	---	322	302	---
TOTAL	26,712	36,163	56,118	62,336	21,636	15,381	37,800	30,946	22,395	13,483	9,129	11,661
MEAN	862	1,205	1,810	2,011	773	496	1,260	998	746	435	294	389
MAX	1,680	3,660	5,380	8,420	1,330	1,290	1,540	1,360	1,100	586	361	1,500
MIN	562	584	891	442	515	289	1,100	687	565	310	275	278
AC-FT	52,980	71,730	111,300	123,600	42,920	30,510	74,980	61,380	44,420	26,740	18,110	23,130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2005, BY WATER YEAR (WY)

MEAN	630	1,554	2,097	2,267	2,084	1,683	1,779	1,559	975	520	310	378
MAX	1,364	5,045	5,654	3,908	4,969	4,994	3,023	2,896	2,849	1,069	514	955
(WY)	(1996)	(1991)	(1976)	(1975)	(1996)	(1972)	(1989)	(1972)	(1974)	(1972)	(1974)	(1968)
MIN	173	194	403	703	720	496	601	603	330	253	227	210
(WY)	(1988)	(1988)	(2003)	(1988)	(1977)	(2005)	(1992)	(1994)	(1987)	(2003)	(1989)	(1989)

12113000 GREEN RIVER NEAR AUBURN, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1962 - 2005	
ANNUAL TOTAL	432,526		343,760			
ANNUAL MEAN	1,182		942		1,316	
HIGHEST ANNUAL MEAN					2,071	1972
LOWEST ANNUAL MEAN					785	1977
HIGHEST DAILY MEAN	7,440	Jan 30	8,420	Jan 19	11,600	Dec 3, 1975
LOWEST DAILY MEAN	219	Aug 20	275	Aug 27	152	Oct 30, 1987
ANNUAL SEVEN-DAY MINIMUM	224	Aug 15	278	Aug 22	157	Oct 20, 1987
ANNUAL RUNOFF (AC-FT)	857,900		681,800		953,000	
10 PERCENT EXCEEDS	2,000		1,510		2,660	
50 PERCENT EXCEEDS	1,020		703		963	
90 PERCENT EXCEEDS	358		302		268	

e Estimated

12113346 SPRINGBROOK CREEK AT ORILLIA, WA

LOCATION.--Lat 47°25'53", long 122°13'35", in SW¼SW¼ sec.31, T.23 N., R.5 E., King County, Hydrologic Unit 17110013, on right bank 50 ft upstream from 84th Avenue South (East Valley Highway), 1.2 mi upstream from confluence with Mill Creek, and 1.0 mi southeast of Orillia.

DRAINAGE AREA.--8.44 mi^2.

PERIOD OF RECORD.--October 1993 to current year. Water years 1994 to 2004 published as “Spring Brook near Orillia.”

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (City of Kent benchmark). U.S. Geological Survey satellite telemeter at station.

REMARKS.--Records poor. Natural flow affected by urbanization and construction of flood-control catchments.

AVERAGE DISCHARGE.--12 years (water years 1994-2005), 10.2 ft^3/s, 16.38 in/yr, 7,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 450 ft^3/s, Feb. 9, 1996, elevation, 19.55 ft; minimum discharge, 0.52 ft^3/s, Sept. 30, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 177 ft^3/s, Jan. 17, gage height, 18.07 ft; minimum discharge, 1.0 ft^3/s, Aug. 26.

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	2.0	9.5	8.7	5.9	6.0	9.8	25	7.7	3.7	2.7	2.4	2.4
2	1.8	46	5.6	4.9	5.9	6.2	12	6.5	4.7	2.7	2.3	2.4
3	1.7	17	4.8	4.6	5.8	4.8	24	6.7	3.5	2.7	2.2	2.4
4	1.7	7.5	6.7	4.5	8.3	3.9	12	6.5	3.3	2.7	2.2	2.4
5	3.7	5.2	9.9	4.3	6.0	3.7	7.5	6.1	3.9	2.9	2.2	2.8
6	11	4.4	13	5.2	26	3.5	7.3	5.7	3.9	21	2.2	2.4
7	3.6	4.0	24	9.3	14	3.4	13	5.3	5.6	3.7	2.3	2.4
8	41	3.7	37	7.1	7.8	3.3	7.6	5.9	8.3	15	2.3	2.4
9	25	3.5	36	5.7	6.6	5.6	5.2	11	3.8	8.8	2.4	2.4
10	9.4	3.3	46	4.5	6.2	3.1	4.8	27	3.3	3.5	2.4	22
11	4.9	3.1	50	4.2	6.0	3.0	28	7.1	3.8	3.3	2.5	8.5
12	3.7	2.9	16	4.0	7.6	3.2	13	8.3	15	3.6	2.5	2.5
13	3.1	3.0	19	4.0	6.1	4.4	6.6	7.1	4.9	3.1	2.5	2.0
14	2.9	3.0	25	3.6	5.4	3.7	5.3	7.7	4.1	2.8	2.4	1.8
15	2.9	12	12	4.6	5.3	2.7	10	20	5.0	2.8	2.5	1.8
16	11	10	9.3	11	5.0	6.9	55	8.5	5.0	2.8	2.5	2.6
17	45	5.8	7.9	98	4.9	3.9	18	6.1	32	2.8	3.3	2.3
18	15	19	7.1	73	5.0	2.9	9.5	24	4.6	2.7	3.0	2.0
19	12	6.8	8.4	34	4.9	6.1	7.2	20	3.5	2.6	2.7	1.9
20	7.1	4.5	7.6	23	4.7	6.3	6.2	26	3.1	2.6	2.5	1.9
21	5.2	4.0	6.1	17	4.3	3.9	5.9	35	e3.5	2.7	2.4	1.8
22	4.8	4.2	5.7	16	4.3	2.9	6.3	17	e3.7	12	2.4	1.8
23	3.8	7.1	5.4	14	4.2	2.7	6.7	6.9	e3.9	4.4	2.4	1.8
24	3.4	26	5.6	11	4.2	2.4	9.9	5.0	e3.4	2.7	2.5	1.8
25	3.4	23	12	10	4.2	2.6	6.1	4.3	3.0	2.5	2.4	1.9
26	3.2	9.7	9.5	9.0	4.1	45	5.8	4.0	3.1	2.5	2.0	1.8
27	2.9	9.2	6.4	9.1	4.0	58	5.8	3.6	4.3	2.4	2.1	1.8
28	3.1	6.0	5.6	7.8	5.6	22	8.3	3.4	e3.0	2.4	2.6	1.7
29	2.9	6.6	13	7.0	---	24	20	3.4	e2.9	2.4	6.9	2.3
30	5.1	10	8.8	6.6	---	11	23	3.4	e2.8	2.3	3.5	10
31	3.0	---	6.3	6.5	---	7.8	---	3.5	---	2.4	2.6	---
TOTAL	249.3	280.0	438.4	429.4	182.4	272.7	375.0	312.7	158.6	133.5	81.1	98.0
MEAN	8.04	9.33	14.1	13.9	6.51	8.80	12.5	10.1	5.29	4.31	2.62	3.27
MAX	45	46	50	98	26	58	55	35	32	21	6.9	22
MIN	1.7	2.9	4.8	3.6	4.0	2.4	4.8	3.4	2.8	2.3	2.0	1.7
AC-FT	494	555	870	852	362	541	744	620	315	265	161	194
CFSM	0.95	1.11	1.68	1.64	0.77	1.04	1.48	1.20	0.63	0.51	0.31	0.39
IN.	1.10	1.23	1.93	1.89	0.80	1.20	1.65	1.38	0.70	0.59	0.36	0.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2005, BY WATER YEAR (WY)

MEAN	9.51	17.5	18.4	17.7	14.4	11.8	9.07	6.35	5.27	3.81	4.37	4.10
MAX	18.5	43.5	30.9	25.0	35.8	17.3	15.0	10.1	10.5	5.92	8.35	8.58
(WY)	(2004)	(2000)	(1999)	(1996)	(1996)	(2003)	(1996)	(2005)	(2001)	(1997)	(2004)	(2004)
MIN	4.32	5.08	9.55	7.46	6.51	6.41	4.16	3.34	2.92	1.98	2.14	1.71
(WY)	(2003)	(1994)	(2001)	(1994)	(2005)	(1996)	(2004)	(1995)	(2004)	(2004)	(1994)	(1999)

12113346 SPRINGBROOK CREEK AT ORILLIA, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1994 - 2005	
ANNUAL TOTAL	3,105.0		3,011.1			
ANNUAL MEAN	8.48		8.25		10.2	
HIGHEST ANNUAL MEAN					14.5	1996
LOWEST ANNUAL MEAN					6.22	1994
HIGHEST DAILY MEAN	60	Jan 29	98	Jan 17	303	Feb 8, 1996
LOWEST DAILY MEAN	1.1	Sep 6	1.7	Oct 3	0.66	Sep 27, 2003
ANNUAL SEVEN-DAY MINIMUM	1.3	Sep 3	1.8	Sep 22	0.75	Sep 25, 2003
ANNUAL RUNOFF (AC-FT)	6,160		5,970		7,370	
ANNUAL RUNOFF (CFSM)	1.01		0.977		1.21	
ANNUAL RUNOFF (INCHES)	13.69		13.27		16.38	
10 PERCENT EXCEEDS	22		19		23	
50 PERCENT EXCEEDS	4.7		4.8		5.3	
90 PERCENT EXCEEDS	1.8		2.4		2.2	

e Estimated

12113347 MILL CREEK AT EARTHWORKS PARK, AT KENT, WA

LOCATION.--Lat 47°23'00", long 122°13'25", in SW¼NW¼ sec.19, T.22 N., R.5 E., King County, Hydrologic Unit 17110013, at control-manhole of flood-detention basin in Earthworks Park, 250 ft upstream from Titus St., and 0.6 mi east of Kent City Hall.

DRAINAGE AREA.--2.49 mi^2.

PERIOD OF RECORD.--January 1994 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (City of Kent benchmark).

REMARKS.--Records fair except for estimated daily discharges, which are poor. Natural flow affected by urbanization and construction of flood-control catchments. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water year 1995-2005), 3.85 ft^3/s, 21.00 in/yr, 2,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined, Feb. 9, 1996, elevation, 47.52 ft, affected by backwater from debris caught on downstream culvert grates; maximum elevation, 48.05 ft, May 13, 1996, affected by backwater from debris caught on downstream culvert grates; minimum discharge, 0.31 ft^3/s, July 5, 1995, Aug. 12, 1997, but may have been lower during periods of culvert maintenance.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft^3/s, May 20, gage height, 44.86 ft; minimum discharge, 0.52 ft^3/s, Sept. 3.

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	0.75	2.0	2.7	1.9	1.8	2.6	7.3	2.8	3.5	0.94	0.80	0.65
2	0.78	9.5	1.7	1.6	1.6	1.6	4.4	2.1	4.1	0.94	0.80	0.65
3	0.80	5.6	1.5	1.5	1.6	1.4	6.7	1.9	1.8	0.93	0.79	0.64
4	0.80	2.5	2.0	1.4	2.5	1.2	4.2	1.9	1.4	0.91	0.81	0.65
5	1.3	1.7	2.6	1.4	1.7	1.2	3.0	1.6	1.7	1.0	0.82	0.65
6	1.9	1.4	3.5	1.9	6.9	1.1	2.8	1.5	1.8	4.2	0.75	0.64
7	0.88	1.2	6.4	2.7	5.1	1.1	3.9	1.4	2.5	1.4	0.74	0.65
8	8.1	1.1	10	2.0	2.6	1.1	2.7	1.6	2.1	4.8	0.86	0.65
9	5.5	1.1	9.0	1.7	2.0	1.2	2.1	3.3	1.3	2.5	0.75	0.64
10	2.3	1.0	13	1.4	1.8	1.1	2.0	5.9	1.2	1.6	e0.74	3.8
11	1.5	1.0	13	1.3	1.7	1.1	7.4	2.3	1.2	1.3	e0.73	0.94
12	1.2	0.97	8.5	1.3	2.2	1.1	3.9	1.8	2.6	1.8	0.73	0.71
13	1.0	0.96	7.6	1.2	1.7	1.0	2.6	1.6	1.5	1.2	0.73	0.69
14	0.97	0.96	8.0	1.2	1.6	1.0	2.1	1.9	1.1	1.1	0.72	0.69
15	0.94	2.9	4.8	1.8	1.5	1.0	3.7	4.3	1.1	1.1	0.71	0.69
16	3.2	2.1	3.2	3.3	1.4	2.6	14	2.8	1.5	1.1	0.71	0.73
17	10	1.4	2.6	21	1.4	1.4	9.1	1.8	7.9	1.0	0.79	0.69
18	4.6	4.3	2.3	21	1.4	1.2	5.6	5.7	2.2	1.2	0.73	0.68
19	3.5	1.6	3.0	15	1.3	2.3	3.5	5.1	1.4	1.2	0.71	0.67
20	1.9	1.3	2.4	13	1.3	1.9	2.8	9.6	1.2	1.1	0.70	0.64
21	2.1	1.1	1.9	10	1.3	1.4	2.3	11	1.5	0.81	0.70	0.68
22	1.4	1.1	1.8	8.1	1.3	1.2	2.1	7.1	1.2	3.1	0.70	0.74
23	1.2	2.2	1.7	4.8	1.2	1.1	2.7	3.5	1.1	1.1	0.69	0.75
24	1.1	7.0	1.6	3.3	1.2	1.0	3.2	2.4	1.0	0.88	0.69	0.75
25	1.1	6.6	3.4	2.6	1.2	1.0	2.1	1.9	0.99	0.85	0.69	0.76
26	1.0	3.0	2.6	2.4	1.2	13	1.8	1.6	0.98	0.83	0.70	0.74
27	0.96	2.6	1.8	2.4	1.1	16	1.7	1.5	1.2	0.83	0.70	0.75
28	0.95	1.7	1.6	2.3	1.7	10	2.1	1.4	0.99	0.83	0.99	0.76
29	0.92	1.8	4.0	2.1	---	9.2	5.7	1.3	0.94	0.83	0.85	1.0
30	1.2	3.6	2.7	1.9	---	5.1	6.0	1.3	0.92	0.89	0.68	1.8
31	0.91	---	2.0	1.9	---	3.4	---	1.4	---	0.85	0.65	---
TOTAL	64.76	75.29	132.9	139.4	53.3	90.6	123.5	95.3	53.92	43.12	23.16	25.48
MEAN	2.09	2.51	4.29	4.50	1.90	2.92	4.12	3.07	1.80	1.39	0.75	0.85
MAX	10	9.5	13	21	6.9	16	14	11	7.9	4.8	0.99	3.8
MIN	0.75	0.96	1.5	1.2	1.1	1.0	1.7	1.3	0.92	0.81	0.65	0.64
AC-FT	128	149	264	276	106	180	245	189	107	86	46	51
CFSM	0.84	1.01	1.72	1.81	0.76	1.17	1.65	1.23	0.72	0.56	0.30	0.34
IN.	0.97	1.12	1.99	2.08	0.80	1.35	1.85	1.42	0.81	0.64	0.35	0.38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2005, BY WATER YEAR (WY)

MEAN	2.30	6.63	7.50	8.02	6.54	4.74	3.17	2.06	1.64	1.08	1.06	1.14
MAX	4.44	13.2	12.6	15.1	20.0	8.34	8.03	3.09	3.45	1.66	1.60	2.00
(WY)	(1998)	(2000)	(1996)	(1997)	(1996)	(1999)	(1996)	(1996)	(1997)	(1997)	(2004)	(2004)
MIN	0.84	1.21	2.29	2.73	1.90	2.55	1.32	1.08	0.80	0.68	0.59	0.71
(WY)	(2003)	(2003)	(2001)	(2001)	(2005)	(2001)	(2004)	(1995)	(2003)	(2003)	(1994)	(2003)

12113347 MILL CREEK AT EARTHWORKS PARK, AT KENT, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1994 - 2005	
ANNUAL TOTAL	950.03		920.73			
ANNUAL MEAN	2.60		2.52		3.85	
HIGHEST ANNUAL MEAN					6.32	1996
LOWEST ANNUAL MEAN					2.21	2001
HIGHEST DAILY MEAN	23	Jan 30	21	Jan 17	124	Nov 14, 2001
LOWEST DAILY MEAN	0.62	Aug 5	0.64	Sep 3	0.44	Oct 24, 1994
ANNUAL SEVEN-DAY MINIMUM	0.66	Jul 30	0.65	Sep 3	0.47	Aug 26, 1994
ANNUAL RUNOFF (AC-FT)	1,880		1,830		2,790	
ANNUAL RUNOFF (CFSM)	1.04		1.01		1.55	
ANNUAL RUNOFF (INCHES)	14.19		13.76		21.00	
10 PERCENT EXCEEDS	6.2		5.7		9.0	
50 PERCENT EXCEEDS	1.5		1.5		1.8	
90 PERCENT EXCEEDS	0.72		0.73		0.75	

e Estimated

12113349 MILL CREEK NEAR MOUTH, AT ORILLIA, WA

LOCATION.--Lat 47°25'49", long 122°14'31", in NE¼NW¼ sec.1, T.22 N., R.4 E., King County, Hydrologic Unit 17110013, on right bank 100 ft upstream from Pedestrian bridge of Interurban Trail, in Orillia.

DRAINAGE AREA.--5.63 mi^2.

PERIOD OF RECORD.--February 1994 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NAVD of 1988 (Levels by City of Kent). Prior to October 2003, recording gage 0.7 mi downstream above NGVD of 1929 (City of Kent benchmark).

REMARKS.--Records fair except for flows less than 2.0 ft^3/s and estimated daily discharges, which are poor. Natural flow affected by Green River Natural Resource area located 1.75 mi upstream and urbanization. U.S. Geological satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water year 1995-2005), 15.2 ft^3/s, 11,030 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 376 ft^3/s, Feb. 9, 1996, from rating curve extended above 133 ft^3/s, elevation, 18.77 ft; minimum discharge, 0.35 ft^3/s, Aug. 12, 2001, result of construction upstream from station at datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 112 ft^3/s, Jan. 17, gage height, 20.49 ft; minimum daily discharge, 1.1 ft^3/s, Aug. 11, 15.

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	9.4	11	11	7.4	5.6	12	39	11	5.8	1.8	1.5	1.6
2	9.3	50	5.4	6.2	5.4	6.4	26	8.2	12	1.8	1.4	1.7
3	9.2	23	4.8	5.8	5.2	5.5	34	7.2	5.6	1.7	1.4	1.7
4	6.2	12	7.0	5.5	9.2	4.7	21	6.8	4.6	1.8	1.3	1.8
5	4.2	8.1	12	5.3	e7.1	4.3	14	6.3	4.6	1.9	1.3	1.9
6	10	6.3	17	5.9	e39	4.1	12	5.9	5.1	22	1.3	1.6
7	2.7	5.3	32	13	25	3.9	17	5.4	6.8	3.5	1.3	1.6
8	39	4.7	47	8.6	e13	3.9	11	5.6	9.1	18	1.2	1.6
9	32	4.3	44	6.9	e8.7	3.9	7.9	11	4.3	12	1.3	1.4
10	9.3	3.8	59	5.7	e7.2	4.0	7.2	29	3.8	4.1	1.3	24
11	4.8	3.6	55	5.3	6.3	3.8	36	8.7	4.8	3.5	1.1	8.0
12	3.9	3.5	34	5.1	8.3	3.8	21	6.9	19	3.4	1.2	2.7
13	3.4	3.4	33	4.8	6.2	3.8	11	6.3	5.6	3.0	1.3	2.3
14	3.3	3.3	41	4.6	5.4	3.9	8.6	8.4	4.3	2.6	1.2	2.1
15	3.1	13	25	5.7	5.1	3.7	13	18	3.8	2.3	1.1	2.0
16	11	11	18	19	4.9	9.4	56	9.9	3.9	2.4	1.2	2.3
17	49	5.4	13	75	4.8	5.6	37	7.8	33	2.4	2.0	2.1
18	23	20	11	78	4.6	4.4	23	26	8.3	2.3	1.7	1.8
19	22	6.8	12	60	4.5	8.9	15	25	5.5	2.3	1.6	1.8
20	14	4.6	12	49	4.3	9.4	11	26	4.6	1.9	1.5	1.8
21	7.8	4.1	7.8	40	4.3	6.2	8.6	35	4.7	1.7	1.5	1.8
22	6.3	3.9	6.8	35	4.2	5.0	7.5	28	4.3	17	1.5	1.8
23	4.9	6.6	6.4	29	4.0	5.4	7.4	15	3.2	4.2	1.5	1.9
24	4.2	29	6.0	21	3.7	8.8	12	9.6	2.5	2.1	1.5	2.0
25	3.9	32	16	16	3.7	9.0	6.9	7.6	2.1	1.8	1.5	2.0
26	3.8	12	14	13	3.6	54	6.2	6.6	2.2	1.7	1.5	2.1
27	3.5	11	7.5	12	3.7	64	5.9	6.2	3.4	1.6	1.6	2.0
28	3.2	6.4	6.3	9.6	5.6	38	9.8	5.7	2.2	1.5	1.7	2.0
29	3.2	6.1	18	8.0	---	38	23	5.3	2.0	1.5	6.5	3.0
30	4.5	12	13	7.1	---	25	28	5.1	1.9	1.5	1.8	9.4
31	3.3	---	7.7	6.5	---	18	---	5.1	---	1.4	1.6	---
TOTAL	317.4	326.2	602.7	574.0	212.6	380.8	536.0	368.6	183.0	130.7	49.4	93.8
MEAN	10.2	10.9	19.4	18.5	7.59	12.3	17.9	11.9	6.10	4.22	1.59	3.13
MAX	49	50	59	78	39	64	56	35	33	22	6.5	24
MIN	2.7	3.3	4.8	4.6	3.6	3.7	5.9	5.1	1.9	1.4	1.1	1.4
AC-FT	630	647	1,200	1,140	422	755	1,060	731	363	259	98	186

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2005, BY WATER YEAR (WY)

MEAN	10.9	24.3	29.8	30.9	26.2	20.5	13.7	8.39	6.18	3.42	3.62	3.91
MAX	26.6	50.7	51.8	50.8	64.8	38.5	27.2	12.5	13.3	6.66	8.97	10.6
(WY)	(2004)	(2000)	(1997)	(1997)	(1996)	(1997)	(1996)	(1996)	(2001)	(1997)	(2004)	(2004)
MIN	2.24	7.42	11.1	13.3	7.59	9.99	4.57	3.75	2.21	1.22	1.24	1.50
(WY)	(2003)	(2003)	(2001)	(2001)	(2005)	(2004)	(2004)	(1995)	(2003)	(2003)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1994 - 2005	
ANNUAL TOTAL	3,975.0		3,775.2			
ANNUAL MEAN	10.9		10.3		15.2	
HIGHEST ANNUAL MEAN					21.4	1999
LOWEST ANNUAL MEAN					10.3	2005
HIGHEST DAILY MEAN	64	Jan 29	78	Jan 18	323	Feb 9, 1996
LOWEST DAILY MEAN	1.1	Aug 19	1.1	Aug 11	0.66	Sep 27, 2003
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 14	1.2	Aug 10	0.68	Sep 26, 2003
ANNUAL RUNOFF (AC-FT)	7,880		7,490		11,030	
10 PERCENT EXCEEDS	31		27		39	
50 PERCENT EXCEEDS	6.1		5.6		7.2	
90 PERCENT EXCEEDS	1.6		1.7		1.5	

e Estimated

12113350 GREEN RIVER AT TUKWILA, WA

LOCATION.--Lat 47°27'55", long 122°14'50", in NW¼SW¼ sec.24, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on left bank under West Valley Freeway bridge 0.6 mi southeast of Tukwila, 1.4 mi upstream from Black River, and at mile 12.4.

DRAINAGE AREA.--440 mi^2.

PERIOD OF RECORD.--October 1960 to September 1984 (discharge). October 1998 to current year (stage only).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (Corps of Engineers bench mark).

REMARKS.--Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions and regulation on upstream tributaries. River stage is affected daily by backwater during high tide. Chemical analyses October 1967 to September 1970. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 21.70 ft, Jan. 31, 1965; minimum observed elevation, 1.00 ft, Sept. 2, 1999.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1959, reached a stage of 22.63 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 17.32 ft, Jan. 19; minimum elevation, 2.01 ft, Aug. 28.

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.48	4.69	6.02	5.37	6.37	4.63	6.17	5.90	4.80	3.93	3.56	3.27
2	4.35	5.48	5.77	5.15	6.24	4.50	6.09	5.71	4.78	3.95	3.48	3.29
3	4.17	7.11	5.59	4.98	5.68	4.34	6.33	5.44	4.67	3.99	3.46	3.32
4	4.05	6.95	5.69	4.77	5.74	4.17	6.24	5.20	4.57	4.00	3.47	3.38
5	3.96	6.11	5.47	4.72	5.98	4.13	6.15	5.09	4.59	4.06	3.48	3.34
6	3.94	5.42	5.54	4.83	6.01	4.17	6.24	5.11	4.62	---	3.46	3.33
7	3.85	4.95	5.68	5.47	5.95	4.24	6.33	4.97	4.58	---	3.44	3.26
8	4.33	4.71	6.42	5.78	6.02	4.25	6.30	4.99	4.64	---	3.39	3.35
9	4.55	4.66	8.02	5.63	5.78	4.40	6.09	5.05	4.52	4.15	3.31	3.37
10	4.00	4.70	9.28	5.54	5.62	4.47	5.99	5.15	4.42	3.95	3.20	3.43
11	3.91	4.69	13.15	5.51	5.51	4.41	6.06	5.29	4.33	3.81	3.14	3.51
12	3.89	4.84	13.44	5.47	5.25	4.12	5.98	5.24	4.29	3.76	3.15	3.42
13	3.89	4.81	11.17	5.04	5.07	3.93	5.78	5.06	4.89	3.67	3.24	3.40
14	4.06	4.95	10.51	4.74	4.88	3.90	5.57	4.99	5.10	3.60	3.38	3.47
15	4.25	5.05	9.67	4.31	4.92	3.84	5.66	5.09	4.90	3.59	3.56	3.59
16	4.63	4.85	9.02	4.28	4.50	3.81	6.50	5.32	4.84	3.58	3.64	3.80
17	5.38	4.47	8.14	5.32	4.38	3.61	6.86	5.55	5.13	3.79	3.81	3.90
18	6.13	4.53	7.35	11.10	4.49	3.58	6.40	5.99	5.02	4.07	3.96	3.98
19	6.73	4.40	7.12	17.04	4.59	3.80	6.56	6.12	4.99	4.19	4.03	3.94
20	6.60	4.21	6.84	16.72	4.59	4.04	6.16	6.18	5.06	4.27	3.98	3.83
21	6.08	4.09	6.54	15.60	4.50	3.85	5.80	6.16	5.08	4.30	3.89	3.68
22	5.64	4.02	6.21	14.47	4.52	3.88	5.58	6.27	4.93	4.42	3.72	3.58
23	5.45	4.02	6.14	11.23	4.49	3.93	5.69	6.04	4.86	4.15	3.59	3.46
24	5.35	5.82	5.86	9.32	4.50	3.85	5.84	6.05	4.76	3.92	3.48	3.31
25	5.45	8.19	6.05	8.93	4.50	3.83	6.14	5.86	4.53	3.65	3.36	3.21
26	5.29	10.90	6.15	8.33	4.52	4.50	6.27	5.62	4.33	3.50	3.24	3.24
27	5.10	9.07	5.98	7.85	4.49	5.73	6.23	5.38	4.23	3.38	3.18	3.21
28	4.96	7.41	5.67	7.44	4.49	6.17	6.04	5.09	4.04	3.37	3.27	3.31
29	4.66	6.87	5.86	6.63	---	6.31	5.87	4.76	3.95	3.43	3.26	3.55
30	4.72	6.59	5.84	6.31	---	6.23	6.15	4.59	3.99	3.49	3.23	4.48
31	4.60	---	5.61	6.20	---	5.99	---	4.55	---	3.56	3.29	---
MAX	6.73	10.90	13.44	17.04	6.37	6.31	6.86	6.27	5.13	---	4.03	4.48
MIN	3.85	4.02	5.47	4.28	4.38	3.58	5.57	4.55	3.95	---	3.14	3.21