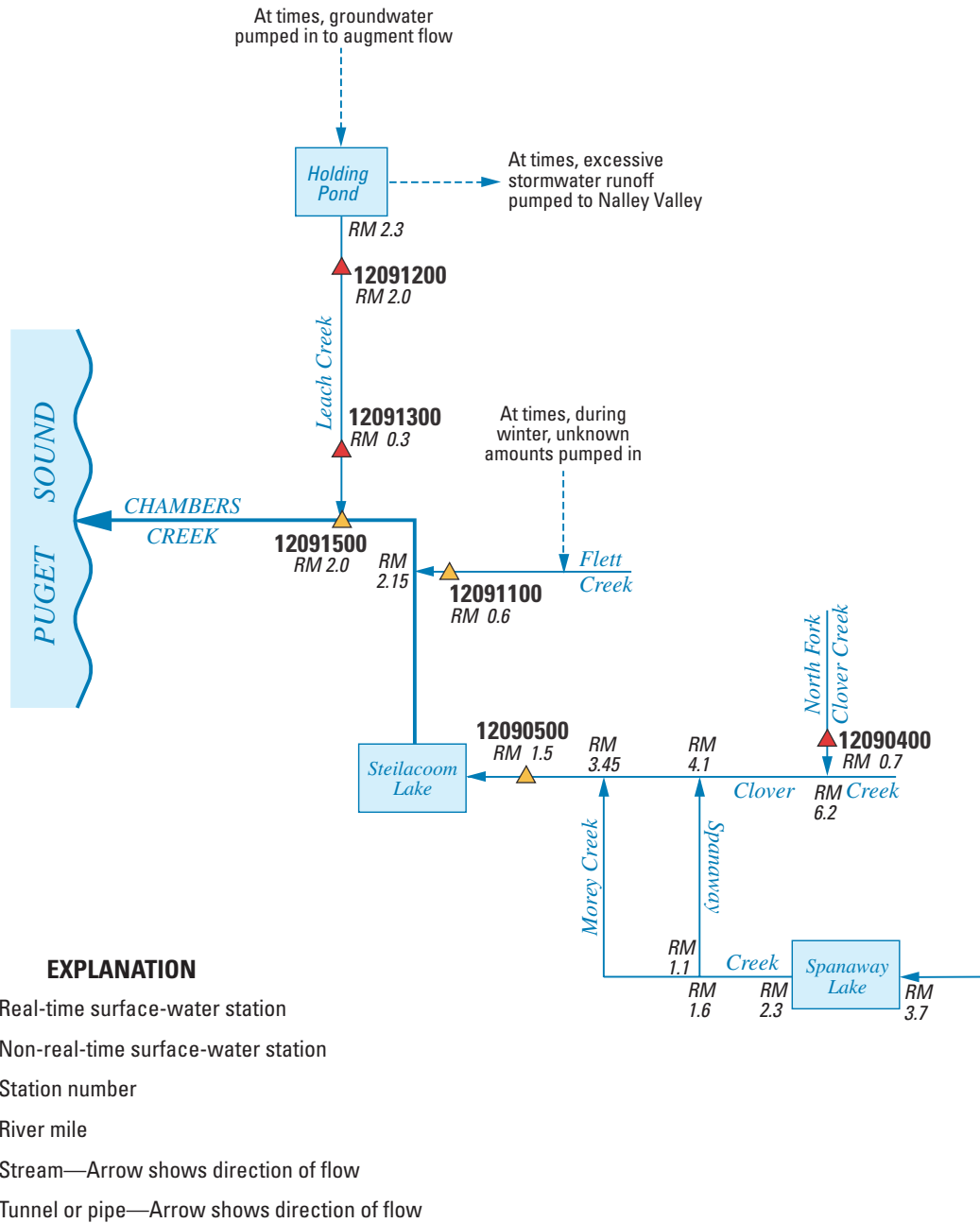


Figure 26. Location of surface-water stations in the Chambers Creek Basin.



**Figure 27.** Schematic diagram showing surface-water stations in the Chambers Creek Basin.

## 12090400 NORTH FORK CLOVER CREEK NEAR PARKLAND, WA

LOCATION.--Lat 47°08'05", long 122°24'50", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec.15, T.19 N., R.3 E., Pierce County, Hydrologic Unit 17110019, at Golden Given Avenue crossing, 1.5 mi southeast of Parkland, and 0.7 mi upstream of mouth.

DRAINAGE AREA.--6.25 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1960-75 (annual maximum), November 1990 to September 1992, October 1994 to September 1997, October 1997 to April 1999 (seasonal records), October 1999 to current year.

REVISED RECORDS.--WDR WA-01-1: 1999(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 315 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair, except for estimated daily discharges and those below 7 ft<sup>3</sup>/s, which are poor. Two flood control ponds (completed in 1999 and 2000, 228 acre-ft, total) upstream from station.

AVERAGE DISCHARGE.--10 years (water years 1992, 1995-97, 2000-05), 6.73 ft<sup>3</sup>/s, 14.63 in/yr, 4,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined Feb. 8, 1996, gage height, 12.81 ft, from outside high-water mark, affected by backwater; minimum discharge, no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 117 ft<sup>3</sup>/s, Jan. 18, gage height, 7.53 ft; minimum discharge, no flow on many days.

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	0.00	0.64	4.2	4.4	5.5	1.2	15	8.4	0.29	0.05	0.00	0.00
2	0.00	13	2.7	3.2	4.8	1.5	12	6.8	0.28	0.04	0.00	0.00
3	0.00	7.4	2.0	2.5	4.4	1.7	10	5.7	0.22	0.02	0.00	0.00
4	0.00	3.7	2.4	2.0	5.0	1.3	8.3	4.3	0.17	0.00	0.00	0.00
5	0.04	2.1	4.4	1.7	4.5	1.1	5.9	3.4	0.15	0.02	0.00	0.00
6	0.60	1.3	4.6	1.6	5.8	0.97	4.7	2.6	0.15	1.8	0.00	0.00
7	0.04	0.81	8.1	3.3	6.8	0.90	5.2	1.8	0.50	0.21	0.00	0.00
8	4.1	0.72	12	4.1	5.0	0.72	5.6	1.6	0.68	1.8	0.00	0.00
9	4.5	0.56	14	3.3	4.0	0.62	3.7	2.5	0.27	1.5	0.00	0.00
10	1.2	0.46	19	2.8	3.4	0.55	2.8	12	0.36	0.42	0.00	0.00
11	0.47	0.36	24	2.3	3.0	0.45	12	6.2	1.2	0.23	0.00	0.00
12	0.13	0.16	13	1.9	2.6	0.45	11	4.1	0.24	0.18	0.00	0.00
13	0.04	0.15	9.3	1.5	2.3	0.45	7.1	2.7	0.15	0.09	0.00	0.00
14	0.00	0.12	12	1.3	1.9	0.50	5.0	2.4	0.10	0.05	0.00	0.00
15	0.04	1.0	9.8	1.6	1.6	0.42	5.4	3.0	0.09	0.04	0.00	0.00
16	0.87	1.2	6.7	5.2	1.4	1.3	50	3.9	0.26	0.03	0.00	0.00
17	12	0.75	5.1	33	1.3	1.2	35	2.8	4.6	0.00	0.00	0.00
18	4.2	4.0	3.9	103	1.2	0.75	17	6.1	0.80	0.00	0.00	0.00
19	5.9	2.7	3.1	61	1.2	1.2	10	11	0.29	0.00	0.00	0.00
20	3.1	1.8	2.5	37	1.1	1.7	7.3	12	0.14	0.00	0.00	0.00
21	1.5	1.1	2.0	23	1.0	1.5	5.4	12	0.19	0.00	0.00	0.00
22	1.1	0.61	1.7	19	1.0	1.2	4.3	11	0.61	1.9	0.00	0.00
23	0.82	0.38	1.4	20	0.92	0.98	3.8	6.7	0.31	0.31	0.00	0.00
24	0.55	1.3	1.3	16	0.81	0.69	6.1	4.1	0.13	0.05	0.00	0.00
25	0.40	8.6	2.4	13	0.73	0.46	5.6	2.6	0.09	0.01	0.00	0.00
26	0.47	4.2	4.1	11	0.73	11	4.1	1.7	0.09	0.00	0.00	0.00
27	0.35	2.5	2.8	10	0.73	51	3.2	1.2	0.43	0.00	0.00	0.00
28	0.20	1.6	2.2	9.0	0.91	31	2.4	0.77	0.16	0.00	0.00	0.00
29	0.12	1.2	3.1	7.9	---	31	7.5	0.53	0.11	0.00	0.00	0.55
30	0.57	3.2	4.0	6.9	---	18	13	0.44	0.07	0.00	0.00	2.6
31	0.31	---	3.1	6.4	---	10	---	0.29	---	0.00	0.00	---
TOTAL	43.62	67.62	190.9	418.9	73.63	175.81	288.4	144.63	13.13	8.75	0.00	3.15
MEAN	1.41	2.25	6.16	13.5	2.63	5.67	9.61	4.67	0.44	0.28	0.00	0.10
MAX	12	13	24	103	6.8	51	50	12	4.6	1.9	0.00	2.6
MIN	0.00	0.12	1.3	1.3	0.73	0.42	2.4	0.29	0.07	0.00	0.00	0.00
AC-FT	87	134	379	831	146	349	572	287	26	17	0.00	6.2
CFSM	0.23	0.36	0.99	2.16	0.42	0.91	1.54	0.75	0.07	0.05	0.00	0.02
IN.	0.26	0.40	1.14	2.49	0.44	1.05	1.72	0.86	0.08	0.05	0.00	0.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2005, BY WATER YEAR (WY)

MEAN	1.34	9.34	17.5	19.7	16.5	11.7	8.76	2.25	0.66	0.10	0.09	0.13
MAX	4.39	20.6	40.3	42.2	41.9	23.2	27.8	5.41	3.01	0.28	0.42	0.40
(WY)	(2004)	(1996)	(1999)	(1997)	(1996)	(1997)	(1991)	(1996)	(2001)	(2005)	(2001)	(1997)
MIN	0.00	0.02	2.36	7.21	2.63	2.05	0.01	0.07	0.02	0.00	0.00	0.00
(WY)	(1995)	(2003)	(2003)	(2001)	(2005)	(2004)	(2004)	(2004)	(2004)	(1991)	(1996)	(2000)

## CHAMBERS CREEK BASIN

12090400 NORTH FORK CLOVER CREEK NEAR PARKLAND, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1991 - 2005	
ANNUAL TOTAL	1,244.92		1,428.54			
ANNUAL MEAN	3.40		3.91		6.73	
HIGHEST ANNUAL MEAN					11.8	1997
LOWEST ANNUAL MEAN					3.91	2005
HIGHEST DAILY MEAN	77	Jan 30	103	Jan 18	400	Feb 8, 1996
LOWEST DAILY MEAN	0.00	Mar 16	0.00	Oct 1	0.00	May 23, 1991
ANNUAL SEVEN-DAY MINIMUM	0.00	Apr 2	0.00	Jul 26	0.00	Jun 2, 1991
ANNUAL RUNOFF (AC-FT)	2,470		2,830		4,880	
ANNUAL RUNOFF (CFSM)	0.544		0.626		1.08	
ANNUAL RUNOFF (INCHES)	7.41		8.50		14.63	
10 PERCENT EXCEEDS	10		10		18	
50 PERCENT EXCEEDS	0.09		1.2		0.81	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

## 12090500 CLOVER CREEK NEAR TILlicUM, WA

LOCATION.--Lat 47°08'46", long 122°30'33", in NW¼SE¼ sec.11, T.19 N., R.2 E., Pierce County, Hydrologic Unit 17110019, at Pacific Highway SW, in Lakewood, 2.5 mi northeast of Tillicum.

DRAINAGE AREA.--73.8 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1949 to September 1954, October 1959 to September 1970 (annual maximums only), October 1990 to September 1992, October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 250 ft above NGVD of 1929, from topographic map. Prior to October 22, 1999, at Bridgeport Way, ¼ mi upstream, at various datums.

REMARKS.--Records fair except for flows below 10 ft<sup>3</sup>/s and estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--18 years (water years 1950-54, 1991-92, 1995-2005), 40.1 ft<sup>3</sup>/s, 7.39 in/yr, 29,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 568 ft<sup>3</sup>/s, Feb. 12, 1991, gage height, 5.71 ft (datum then in use); no flow for many days in 1949, 1952-53, 2001-05.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 79 ft<sup>3</sup>/s, Apr. 16, gage height, 15.63 ft; minimum discharge, no flow on several days in October and September.

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	e0.00	3.3	5.0	12	22	15	37	33	20	11	4.5	0.11
2	e0.00	11	5.0	10	22	15	32	32	20	10	4.2	0.08
3	e0.00	4.1	4.7	9.8	22	14	31	31	19	9.4	4.0	0.05
4	e0.00	4.3	5.4	9.8	22	14	29	29	19	8.8	3.9	0.02
5	1.8	4.2	5.8	9.6	21	13	26	27	19	8.3	4.1	0.01
6	2.4	4.2	6.6	9.6	25	12	24	26	19	14	4.2	0.00
7	1.7	4.1	9.5	11	24	12	26	25	19	11	4.5	0.22
8	7.2	3.9	11	11	23	12	24	24	19	14	4.5	0.24
9	2.3	3.8	15	11	22	11	23	27	19	13	4.2	0.18
10	1.9	3.5	22	9.6	21	11	22	31	20	12	4.1	0.71
11	1.9	3.3	23	9.3	20	12	31	29	20	12	3.9	0.25
12	1.9	3.2	23	9.4	20	11	30	27	19	12	4.1	0.14
13	1.9	3.1	23	8.8	19	10	27	25	19	11	4.2	0.08
14	1.9	2.9	23	8.4	19	10	25	24	17	12	4.0	0.03
15	1.8	4.1	20	9.4	18	10	26	28	17	10	2.7	0.10
16	2.3	2.4	18	11	18	11	48	25	18	9.8	1.6	0.23
17	8.6	2.3	17	27	18	11	56	24	24	9.7	1.3	0.10
18	2.4	5.6	16	53	18	10	49	29	20	10	1.2	0.04
19	5.2	2.7	15	57	18	11	40	30	18	7.9	1.4	0.02
20	2.3	3.0	15	51	17	11	35	31	17	7.0	1.5	0.04
21	2.4	2.9	14	42	16	10	33	32	17	7.9	1.4	0.01
22	2.6	2.5	14	38	16	9.4	31	32	17	9.2	1.3	0.00
23	2.6	2.4	13	35	16	9.5	30	30	16	7.2	1.1	0.00
24	2.7	3.2	13	33	16	9.3	31	28	15	6.8	0.92	0.00
25	2.9	6.6	14	31	16	9.0	31	25	15	6.6	0.77	0.00
26	3.2	3.6	13	29	15	20	29	24	14	7.1	0.82	0.00
27	2.7	3.6	12	28	15	41	28	22	14	7.0	0.55	0.00
28	2.6	3.6	11	27	15	41	27	21	13	6.6	0.46	0.00
29	2.7	3.9	12	26	---	44	33	21	12	6.3	0.32	0.91
30	3.5	4.9	11	24	---	38	34	21	12	6.1	0.15	3.9
31	2.6	---	11	23	---	32	---	20	---	4.9	0.14	---
TOTAL	78.00	116.2	421.0	683.7	534	499.2	948	833	527	288.6	76.03	7.47
MEAN	2.52	3.87	13.6	22.1	19.1	16.1	31.6	26.9	17.6	9.31	2.45	0.25
MAX	8.6	11	23	57	25	44	56	33	24	14	4.5	3.9
MIN	0.00	2.3	4.7	8.4	15	9.0	22	20	12	4.9	0.14	0.00
AC-FT	155	230	835	1,360	1,060	990	1,880	1,650	1,050	572	151	15
CFSM	0.03	0.05	0.18	0.30	0.26	0.22	0.43	0.36	0.24	0.13	0.03	0.00
IN.	0.04	0.06	0.21	0.34	0.27	0.25	0.48	0.42	0.27	0.15	0.04	0.00

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2005, BY WATER YEAR (WY)

MEAN	4.08	13.0	49.3	80.3	102	89.1	64.6	39.4	22.8	12.1	5.06	3.05
MAX	13.8	37.0	119	232	279	196	133	78.5	42.1	26.9	12.5	11.5
(WY)	(1998)	(1991)	(1951)	(1997)	(1951)	(1997)	(1991)	(1996)	(1996)	(1996)	(1996)	(1997)
MIN	0.00	0.00	0.00	13.4	14.8	15.3	22.8	12.3	7.31	1.75	0.41	0.00
(WY)	(1953)	(1953)	(1953)	(2001)	(2001)	(2001)	(2001)	(2004)	(2004)	(2004)	(2004)	(2003)

## CHAMBERS CREEK BASIN

12090500 CLOVER CREEK NEAR TILlicUM, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1949 - 2005	
ANNUAL TOTAL	6,492.76		5,012.20			
ANNUAL MEAN	17.7		13.7		40.1	
HIGHEST ANNUAL MEAN					81.9	1997
LOWEST ANNUAL MEAN					9.72	2001
HIGHEST DAILY MEAN	100	Jan 31	57	Jan 19	532	Feb 12, 1951
LOWEST DAILY MEAN	0.00	Aug 5	0.00	Oct 1	0.00	Oct 20, 1949
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 9	0.00	Sep 22	0.00	Oct 20, 1949
ANNUAL RUNOFF (AC-FT)	12,880		9,940		29,090	
ANNUAL RUNOFF (CFSM)	0.240		0.186		0.544	
ANNUAL RUNOFF (INCHES)	3.27		2.53		7.39	
10 PERCENT EXCEEDS	51		30		105	
50 PERCENT EXCEEDS	9.9		11		20	
90 PERCENT EXCEEDS	0.00		0.65		1.3	

e Estimated

12091100 FLETT CREEK AT TACOMA, WA

LOCATION.--Lat 47°11'23", long 122°31'08", in NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank upstream of 75th Street bridge, 0.6 mi upstream from mouth and 0.7 mi west of city limits of Tacoma.

DRAINAGE AREA.--7.33 mi<sup>2</sup>, excludes 0.68 mi<sup>2</sup> storm drainage diverted to Leach Creek basin, but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--June 1959 to September 1985, October 1985 to September 1996 (seasonal records). October 1996 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 189.32 ft above NGVD of 1929 (levels by USGS National Mapping Division). Prior to Oct. 11, 2000, at same site and at datum 5.74 ft higher.

REMARKS.--Records fair except discharges below 5.0 ft<sup>3</sup>/s, which are poor. Storm sewer drainage upstream from station. Several diversions for irrigation and industrial use. At times during winter months 1,000 gpm are pumped into creek for short intervals from Mountain View Memorial Park. Since October 1979, Flett Creek flood control retention ponds store and release flood water upstream from station. Chemical analyses October 1964 to September 1965.

AVERAGE DISCHARGE.--35 years (water years 1960-85, 1997-2005), 10.8 ft<sup>3</sup>/s, 7,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 203 ft<sup>3</sup>/s, Feb. 8, 1996, gage height, 3.08 ft, site and datum then in use, from rating curve extended above 115 ft<sup>3</sup>/s; minimum discharge, 0.04 ft<sup>3</sup>/s, several days in September 2005.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 78 ft<sup>3</sup>/s, Jan. 19, gage height, 11.01 ft; minimum discharge, 0.04 ft<sup>3</sup>/s, several days in September.

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	0.47	2.7	6.6	7.6	7.8	6.1	21	15	7.0	4.3	0.64	0.07
2	0.30	11	5.9	6.3	8.9	5.8	23	14	6.8	4.1	0.89	0.06
3	0.28	24	4.7	5.6	6.3	7.3	19	14	6.5	4.0	0.77	0.06
4	0.25	16	5.3	5.3	9.5	6.4	19	12	6.2	3.9	0.53	0.06
5	0.45	11	9.4	4.7	7.2	5.7	12	9.6	5.9	3.9	0.44	0.06
6	0.96	6.0	9.9	4.6	9.7	5.2	8.4	8.5	5.9	6.2	0.39	0.06
7	2.2	4.5	13	6.4	19	4.5	9.1	7.8	5.9	6.7	0.35	0.06
8	4.7	3.1	20	8.5	13	5.1	15	7.6	6.2	6.1	0.30	0.06
9	12	3.5	21	8.9	9.5	4.7	7.7	8.4	6.2	7.8	0.24	0.06
10	16	3.4	28	7.7	11	4.2	7.5	17	5.9	7.1	0.24	0.11
11	16	3.1	38	5.8	8.4	3.9	19	18	6.7	6.0	0.22	0.07
12	7.0	2.9	25	4.4	5.9	4.0	19	12	6.6	5.0	0.22	0.05
13	5.6	2.5	17	3.1	6.8	3.9	16	9.7	6.0	4.4	0.19	0.04
14	3.1	2.8	18	3.3	8.7	3.1	11	9.6	5.5	4.2	0.18	0.04
15	2.9	3.8	18	2.6	5.0	4.5	11	14	5.2	4.1	0.16	0.06
16	6.6	7.0	13	8.0	5.8	4.7	33	19	5.1	4.0	0.15	0.06
17	16	5.2	9.0	22	6.0	6.4	49	13	12	3.9	0.15	0.05
18	26	8.8	7.6	68	5.9	5.2	32	15	12	3.7	0.14	0.05
19	23	12	6.4	75	5.9	5.4	19	20	8.2	3.9	0.12	0.05
20	22	6.7	7.0	70	5.8	8.7	13	21	6.5	3.7	0.11	0.09
21	13	4.9	6.9	48	5.4	9.3	11	28	5.6	5.2	0.10	0.13
22	10	5.4	6.6	27	6.0	5.8	9.3	23	5.3	4.6	0.10	0.12
23	8.2	4.9	5.7	25	4.8	5.1	7.8	17	5.4	4.6	0.09	0.12
24	6.3	4.6	5.7	19	5.1	4.7	8.6	12	5.0	4.4	0.10	0.12
25	3.0	11	6.2	15	5.0	4.4	10	9.5	4.9	3.8	0.09	0.11
26	4.8	13	11	12	4.9	13	9.4	8.4	4.9	3.5	0.08	0.12
27	2.6	6.5	8.7	11	4.9	5.6	8.4	7.7	5.1	2.3	0.08	0.10
28	2.7	4.2	6.8	9.5	5.8	5.5	8.4	7.1	5.0	2.8	0.08	0.10
29	2.7	3.2	6.0	9.1	---	4.0	11	6.7	5.0	2.2	0.08	0.51
30	3.3	4.8	7.8	8.7	---	2.8	18	6.4	4.7	1.3	0.07	0.68
31	3.0	---	6.1	8.5	---	2.0	---	6.5	---	0.81	0.06	---
TOTAL	225.41	202.5	360.3	520.6	208.0	346.1	465.6	397.5	187.2	132.51	7.36	3.33
MEAN	7.27	6.75	11.6	16.8	7.43	11.2	15.5	12.8	6.24	4.27	0.24	0.11
MAX	26	24	38	75	19	56	49	28	12	7.8	0.89	0.68
MIN	0.25	2.5	4.7	2.6	4.8	3.1	7.5	6.4	4.7	0.81	0.06	0.04
AC-FT	447	402	715	1,030	413	686	924	788	371	263	15	6.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2005, BY WATER YEAR (WY)

MEAN	4.36	10.5	19.3	23.6	23.0	20.0	14.4	8.69	5.38	2.97	1.64	2.32
MAX	18.7	32.4	40.2	54.9	53.9	52.1	32.4	29.9	15.6	10.9	5.24	9.81
(WY)	(1998)	(1991)	(1999)	(1997)	(1999)	(1972)	(1991)	(1996)	(1997)	(1983)	(1983)	(1997)
MIN	0.13	1.39	3.14	1.93	1.69	5.81	2.96	2.39	0.45	0.25	0.18	0.11
(WY)	(1988)	(2003)	(1977)	(1977)	(1977)	(1962)	(1977)	(1977)	(2003)	(2003)	(2002)	(2005)

## CHAMBERS CREEK BASIN

12091100 FLETT CREEK AT TACOMA, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1959 - 2005	
ANNUAL TOTAL	3,180.04		3,056.41			
ANNUAL MEAN	8.69		8.37		10.8	
HIGHEST ANNUAL MEAN					21.7	1997
LOWEST ANNUAL MEAN					2.87	1977
HIGHEST DAILY MEAN	58	Jan 30	75	Jan 19	138	Nov 15, 2001
LOWEST DAILY MEAN	0.16	Aug 29	0.04	Sep 13	0.04	Sep 13, 2005
ANNUAL SEVEN-DAY MINIMUM	0.16	Sep 2	0.05	Sep 12	0.05	Sep 12, 2005
ANNUAL RUNOFF (AC-FT)	6,310		6,060		7,840	
10 PERCENT EXCEEDS	20		19		26	
50 PERCENT EXCEEDS	6.6		5.9		6.5	
90 PERCENT EXCEEDS	0.21		0.12		0.92	



12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 1.0 mi south of Fircrest, and 2 mi upstream from mouth.

DRAINAGE AREA.--4.73 mi<sup>2</sup> includes 0.68 mi<sup>2</sup> storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to September 1985, October 1985 to April 1988 (seasonal records), October 1988 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder, metal weir control, and crest-stage gage. Prior to Oct. 19, 1979, at site 20 ft downstream at same datum. Datum of gage is 222.98 ft above NGVD of 1929 (levels by U.S. Geological Survey National Mapping Division).

REMARKS.--Records fair except for estimated daily discharges and flows below 3 ft<sup>3</sup>/s, which are poor. Since Oct. 1, 1961, flow may be regulated at dam upstream from station. Storage is not retained. Since early 1992 excess stormwater runoff pumped into Nalley Valley. Since June 30, 1993, low flows supplemented from well in basin. Drainage in basin influenced by urbanization. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1958-85, 1989-2005), 4.82 ft<sup>3</sup>/s, 13.84 in/yr, 3,490 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 417 ft<sup>3</sup>/s, Oct. 20, 2003, by computation of peak flow through culvert; maximum gage height, 7.52 ft, Oct. 20, from floodmark; minimum discharge, 0.1 ft<sup>3</sup>/s, Sept. 22, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 76 ft<sup>3</sup>/s, Jan. 17, gage height, 2.26 ft; maximum gage height, 2.28 ft, Mar. 26, 27; minimum discharge, 0.83 ft<sup>3</sup>/s, Feb. 25.

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	2.8	8.1	4.2	5.2	2.7	4.7	19	3.1	3.3	2.8	2.7	2.6
2	2.8	29	3.2	3.1	2.7	3.3	5.7	9.0	2.9	2.8	2.6	2.6
3	2.6	4.1	3.0	3.1	2.6	2.5	9.5	3.3	2.9	2.8	2.7	2.6
4	2.8	3.3	11	2.9	4.6	2.4	3.7	3.2	2.8	2.8	2.6	2.6
5	5.9	3.2	5.6	2.8	2.6	2.4	3.4	3.0	2.9	4.1	2.5	2.6
6	4.0	3.1	10	4.0	17	2.3	3.3	2.9	4.6	11	2.3	2.6
7	2.9	3.0	16	5.1	3.5	2.3	7.3	2.8	3.5	2.9	2.3	2.6
8	25	3.0	18	5.3	2.8	2.3	3.3	3.2	3.0	11	2.2	2.6
9	7.9	3.0	21	7.6	2.7	2.5	3.0	7.9	2.8	3.2	2.5	3.2
10	3.4	3.0	26	3.7	2.6	2.4	5.0	11	3.3	3.1	2.6	4.5
11	3.1	3.0	15	2.9	2.6	2.4	25	3.0	2.9	2.9	2.6	2.7
12	3.0	3.0	4.0	2.9	3.5	2.3	5.6	2.4	2.7	3.0	2.7	2.7
13	3.1	3.0	7.3	2.8	2.6	2.3	3.8	2.9	2.8	2.9	2.4	2.6
14	3.0	3.2	8.4	2.8	2.5	2.5	4.1	5.4	2.1	2.8	2.0	2.6
15	3.0	7.1	3.5	6.5	2.7	2.4	14	13	1.1	2.8	2.2	2.6
16	8.2	3.9	3.3	7.3	2.7	6.6	28	3.4	3.5	2.8	2.5	2.8
17	28	3.2	3.1	52	2.6	2.5	6.1	3.4	12	2.8	2.7	1.9
18	5.3	12	3.0	44	2.5	2.4	3.7	14	2.9	2.6	2.6	1.9
19	19	3.2	3.0	6.1	2.5	7.4	3.4	12	2.8	2.8	2.6	2.2
20	4.1	3.0	2.8	9.0	2.4	7.2	3.2	12	2.8	2.8	2.6	2.0
21	5.5	3.0	2.9	4.2	2.4	3.8	3.1	7.3	3.4	2.8	2.6	1.6
22	4.3	3.1	2.9	8.0	2.4	2.4	3.0	4.7	3.3	4.2	2.6	1.6
23	3.2	e3.0	2.9	3.7	2.5	2.2	3.3	3.3	2.8	2.8	2.6	1.9
24	3.0	e6.0	2.8	3.2	2.0	2.3	3.9	3.1	2.8	2.7	2.6	2.6
25	3.4	13	7.5	3.0	1.9	2.2	4.2	3.0	2.9	2.7	2.6	2.2
26	3.5	3.4	4.2	3.0	2.4	39	3.0	2.7	3.0	2.7	2.6	2.3
27	3.0	3.1	3.2	3.8	2.3	31	2.9	3.0	3.6	1.9	2.6	2.7
28	2.9	3.0	3.2	2.8	2.7	9.9	3.0	2.9	2.9	1.2	2.6	2.7
29	2.9	5.9	5.7	3.2	---	11	11	2.9	2.8	2.0	2.6	13
30	4.0	7.0	3.2	2.6	---	3.7	5.4	2.9	2.8	2.7	2.6	10
31	3.0	---	2.9	2.7	---	5.3	---	3.2	---	2.7	2.6	---
TOTAL	178.6	157.9	212.8	219.3	89.0	177.9	202.9	159.9	97.9	103.1	78.5	93.1
MEAN	5.76	5.26	6.86	7.07	3.18	5.74	6.76	5.16	3.26	3.33	2.53	3.10
MAX	28	29	26	52	17	39	28	14	12	11	2.7	13
MIN	2.6	3.0	2.8	2.6	1.9	2.2	2.9	2.4	1.1	1.2	2.0	1.6
AC-FT	354	313	422	435	177	353	402	317	194	204	156	185
CFSM	1.22	1.11	1.45	1.50	0.67	1.21	1.43	1.09	0.69	0.70	0.54	0.66
IN.	1.40	1.24	1.67	1.72	0.70	1.40	1.60	1.26	0.77	0.81	0.62	0.73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2005, BY WATER YEAR (WY)

MEAN	4.36	7.26	7.77	7.99	6.64	5.60	4.38	3.23	3.00	2.41	2.58	2.97
MAX	11.3	16.8	15.5	16.3	15.1	12.4	10.3	5.73	5.30	4.58	5.21	6.92
(WY)	(2004)	(1991)	(1997)	(1990)	(1999)	(1972)	(1991)	(1997)	(1997)	(1983)	(2004)	(1978)
MIN	1.57	2.53	3.54	2.80	1.72	2.22	2.09	1.72	1.40	1.33	1.12	1.24
(WY)	(1973)	(1977)	(1977)	(1962)	(1993)	(1992)	(1977)	(1965)	(1969)	(1969)	(1969)	(1989)

## CHAMBERS CREEK BASIN

12091200 LEACH CREEK NEAR FIRCREST, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1957 - 2005	
ANNUAL TOTAL	1,935.7		1,770.9			
ANNUAL MEAN	5.29		4.85		4.82	
HIGHEST ANNUAL MEAN					8.15 1997	
LOWEST ANNUAL MEAN					2.61 1962	
HIGHEST DAILY MEAN	35	Jan 29	52	Jan 17	166	Jan 9, 1990
LOWEST DAILY MEAN	2.5	Jun 11	1.1	Jun 15	0.50	Sep 1, 1972
ANNUAL SEVEN-DAY MINIMUM	2.6	Aug 14	1.9	Sep 17	0.71	Aug 30, 1972
ANNUAL RUNOFF (AC-FT)	3,840		3,510		3,490	
ANNUAL RUNOFF (CFSM)	1.12		1.03		1.02	
ANNUAL RUNOFF (INCHES)	15.22		13.93		13.84	
10 PERCENT EXCEEDS	10		9.2		10	
50 PERCENT EXCEEDS	3.4		3.0		2.7	
90 PERCENT EXCEEDS	2.8		2.4		1.5	

e Estimated

## 12091300 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 0.3 mi upstream from mouth, and 4.1 mi northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi<sup>2</sup>, includes 0.68 mi<sup>2</sup> storm drainage from Flett Creek basin. Drainage area used prior to July 1967, 5.88 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1957 to September 1985, October 1985 to September 1992 (seasonal records), October 1992 to September 2004, October 2004 to April 2005 (seasonal record).

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 140 ft above NGVD of 1929. Prior to June 27, 1973, water-stage recorder at site 150 ft upstream at different datum. Supplementary water-stage recorder at site 50 ft downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973, to Mar. 14, 1975, nonrecording gage at site 350 ft upstream at different datum.

REMARKS.--Records fair. Some pumping for community use upstream from gage. Since Oct. 1, 1961, flow may be regulated at flood control dam upstream from gage. Since early 1992 excess stormwater runoff pumped into Nalley Valley. Since June 30, 1993, low flows supplemented from well in basin. Drainage in basin influenced by urbanization. Chemical analyses October 1962 to September 1965, October 1975 to September 1976. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--40 years (water years 1958-85, 1993-2004), 10.9 ft<sup>3</sup>/s, 7,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 378 ft<sup>3</sup>/s, Jan. 18, 1986, by culvert computation of peak flow through culvert, gage height, 5.21 ft, from outside high-water mark; minimum discharge, 2.0 ft<sup>3</sup>/s, July 3, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 98 ft<sup>3</sup>/s, Jan. 18, gage height, 3.44 ft; minimum discharge, 6.3 ft<sup>3</sup>/s, Feb. 25.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	7.1	12	11	9.8	7.4	11	28
2	7.1	40	8.6	7.8	7.5	8.9	15
3	6.9	14	8.3	7.4	7.4	8.1	18
4	7.0	9.6	10	7.5	9.5	7.7	10
5	7.3	9.5	15	7.3	7.5	7.6	9.1
6	10	9.5	15	7.5	21	7.6	9.2
7	7.1	9.5	18	9.2	12	7.6	14
8	25	9.5	29	10	8.4	7.5	9.3
9	26	9.4	21	12	8.0	7.8	8.6
10	8.4	9.1	38	8.6	7.8	7.6	9.1
11	7.6	9.1	36	7.5	8.0	7.5	31
12	7.8	9.1	11	7.3	9.0	7.5	18
13	7.8	8.8	12	7.3	8.1	7.4	10
14	7.8	8.8	16	7.1	7.8	7.6	11
15	7.8	12	10	7.8	7.9	7.6	19
16	9.7	9.5	9.5	15	8.0	12	42
17	47	8.8	9.2	58	8.0	8.1	14
18	14	20	8.8	71	7.8	7.7	9.5
19	29	9.1	8.8	19	7.7	13	8.6
20	14	8.2	8.4	17	7.7	14	8.3
21	12	8.1	8.2	15	7.6	9.8	8.1
22	11	8.3	8.1	18	7.6	7.8	8.1
23	11	8.4	8.1	14	7.8	7.6	8.0
24	10	11	7.8	11	7.5	7.6	9.5
25	10	26	10	11	7.1	7.5	9.7
26	11	8.9	12	9.9	7.7	42	7.9
27	9.9	8.4	8.2	10	7.8	51	7.8
28	9.5	8.2	8.0	7.6	8.0	17	7.7
29	9.5	8.3	9.4	8.0	---	22	17
30	10	13	9.0	7.5	---	9.8	12
31	9.2	---	7.6	7.5	---	9.5	---
TOTAL	377.5	344.1	400.0	423.6	237.6	365.4	397.5
MEAN	12.2	11.5	12.9	13.7	8.49	11.8	13.2
MAX	47	40	38	71	21	51	42
MIN	6.9	8.1	7.6	7.1	7.1	7.4	7.7
AC-FT	749	683	793	840	471	725	788

## 12091500 CHAMBERS CREEK BELOW LEACH CREEK, NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'52", long 122°31'39", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ , sec.27, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 200 ft downstream from Leach Creek, 1.5 mi downstream from outlet of Steilacoom Lake, and 4 mi northeast of Steilacoom.

DRAINAGE AREA.--104 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1937 to September 1940, July 1943 to September 1965, October 1997 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 100 ft above NGVD of 1929, from topographic map. Prior to October 1997, at several sites within 0.10 mi downstream from present site at various datums.

REMARKS.--Records fair, except estimated daily discharges, which are poor. Some diversions from tributaries for domestic use. Flow partially regulated at Steilacoom Lake and in Leach Creek Basin, see remarks for station 12091300.

AVERAGE DISCHARGE.--32 years (water years 1939-40, 1944-65, 1998-2005), 108 ft<sup>3</sup>/s, 78,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 792 ft<sup>3</sup>/s, Jan. 5, 1956, gage height, 3.58 ft, site and datum then in use; minimum discharge, 14 ft<sup>3</sup>/s, Aug. 15-17, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 234 ft<sup>3</sup>/s, Jan. 18, gage height, 3.07 ft; minimum discharge, 27 ft<sup>3</sup>/s, Aug. 24-29, Sept. 14, 20-23.

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	32	51	52	63	84	e72	e101	e96	80	68	38	29
2	32	80	49	59	81	e71	e99	e95	82	67	38	29
3	31	58	47	58	85	e68	e93	e95	81	67	37	29
4	32	53	52	57	88	e65	e91	e95	75	66	33	29
5	33	50	57	56	81	e63	e87	92	74	67	32	29
6	37	45	59	56	77	e60	e87	91	76	82	31	29
7	42	44	67	60	76	e58	e89	87	72	69	31	29
8	72	43	80	64	71	e55	e92	87	73	75	30	29
9	69	44	79	67	70	e53	e91	90	70	57	30	29
10	55	44	103	60	68	e52	e93	119	70	54	30	30
11	54	42	105	57	67	e60	e111	104	73	e67	30	29
12	48	42	71	56	64	e61	e120	95	70	e66	28	29
13	48	41	68	54	62	e60	e110	91	69	53	28	29
14	50	41	76	54	61	e60	e101	94	68	e60	28	29
15	47	47	70	56	63	e61	e110	111	66	48	28	29
16	51	46	65	68	60	e64	e140	107	67	48	28	29
17	96	58	60	131	58	e66	e140	98	89	46	28	28
18	70	78	59	196	56	e64	e120	118	77	46	28	28
19	90	66	58	156	55	e67	e100	123	71	46	28	28
20	68	58	58	157	54	e73	e81	126	69	45	28	28
21	60	53	58	141	54	e73	e70	125	68	44	28	27
22	56	52	58	123	59	e71	e67	105	68	46	28	27
23	53	51	57	118	55	e67	e67	89	66	43	28	27
24	50	55	57	109	66	e67	e70	81	64	41	27	28
25	47	70	64	105	60	e67	e74	77	63	40	27	28
26	49	56	66	100	57	e114	e77	73	66	40	27	28
27	46	51	61	98	e60	e141	e76	71	70	40	27	28
28	45	48	59	95	e62	e149	e75	72	69	40	27	28
29	45	48	62	94	---	e140	e81	74	69	40	27	31
30	48	53	62	91	---	e120	e93	75	69	40	28	36
31	47	---	59	89	---	e103	---	76	---	39	29	---
TOTAL	1,603	1,568	1,998	2,748	1,854	2,365	2,806	2,932	2,144	1,650	915	865
MEAN	51.7	52.3	64.5	88.6	66.2	76.3	93.5	94.6	71.5	53.2	29.5	28.8
MAX	96	80	105	196	88	149	140	126	89	82	38	36
MIN	31	41	47	54	54	52	67	71	63	39	27	27
AC-FT	3,180	3,110	3,960	5,450	3,680	4,690	5,570	5,820	4,250	3,270	1,810	1,720
CFSTM	0.50	0.50	0.62	0.85	0.64	0.73	0.90	0.91	0.69	0.51	0.28	0.28
IN.	0.57	0.56	0.71	0.98	0.66	0.85	1.00	1.05	0.77	0.59	0.33	0.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2005, BY WATER YEAR (WY)

	54.7	70.9	125	180	205	192	147	114	82.3	59.4	47.5	45.6
MEAN	54.7	70.9	125	180	205	192	147	114	82.3	59.4	47.5	45.6
MAX	96.9	111	357	496	499	448	270	201	126	101	94.6	79.7
(WY)	(1998)	(1998)	(1956)	(1956)	(1951)	(1950)	(1950)	(1948)	(1948)	(1948)	(1948)	(1948)
MIN	36.0	37.4	40.5	43.7	66.2	73.2	62.5	60.4	45.5	35.1	29.5	28.8
(WY)	(1953)	(2003)	(1945)	(1945)	(2005)	(2001)	(2004)	(1944)	(2004)	(2004)	(2005)	(2005)

## 12091500 CHAMBERS CREEK BELOW LEACH CREEK, NEAR STEILACOOM, WA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1938 - 2005	
ANNUAL TOTAL	27,067		23,448		108	
ANNUAL MEAN	74.0		64.2		184	
HIGHEST ANNUAL MEAN					1951	
LOWEST ANNUAL MEAN					1944	
HIGHEST DAILY MEAN	255	Jan 30	196	Jan 18	650	Feb 13, 1951
LOWEST DAILY MEAN	30	Aug 20	27	Aug 24	14	Aug 16, 1965
ANNUAL SEVEN-DAY MINIMUM	31	Aug 14	27	Aug 23	26	Aug 13, 1965
ANNUAL RUNOFF (AC-FT)	53,690		46,510		78,570	
ANNUAL RUNOFF (CFSM)	0.711		0.618		1.04	
ANNUAL RUNOFF (INCHES)	9.68		8.39		14.17	
10 PERCENT EXCEEDS	164		100		214	
50 PERCENT EXCEEDS	56		61		81	
90 PERCENT EXCEEDS	32		29		40	

e Estimated