

Figure 16. Location of surface-water stations in the Big Quilcene River, Duckabush River, and Big Beef Creek Basins.

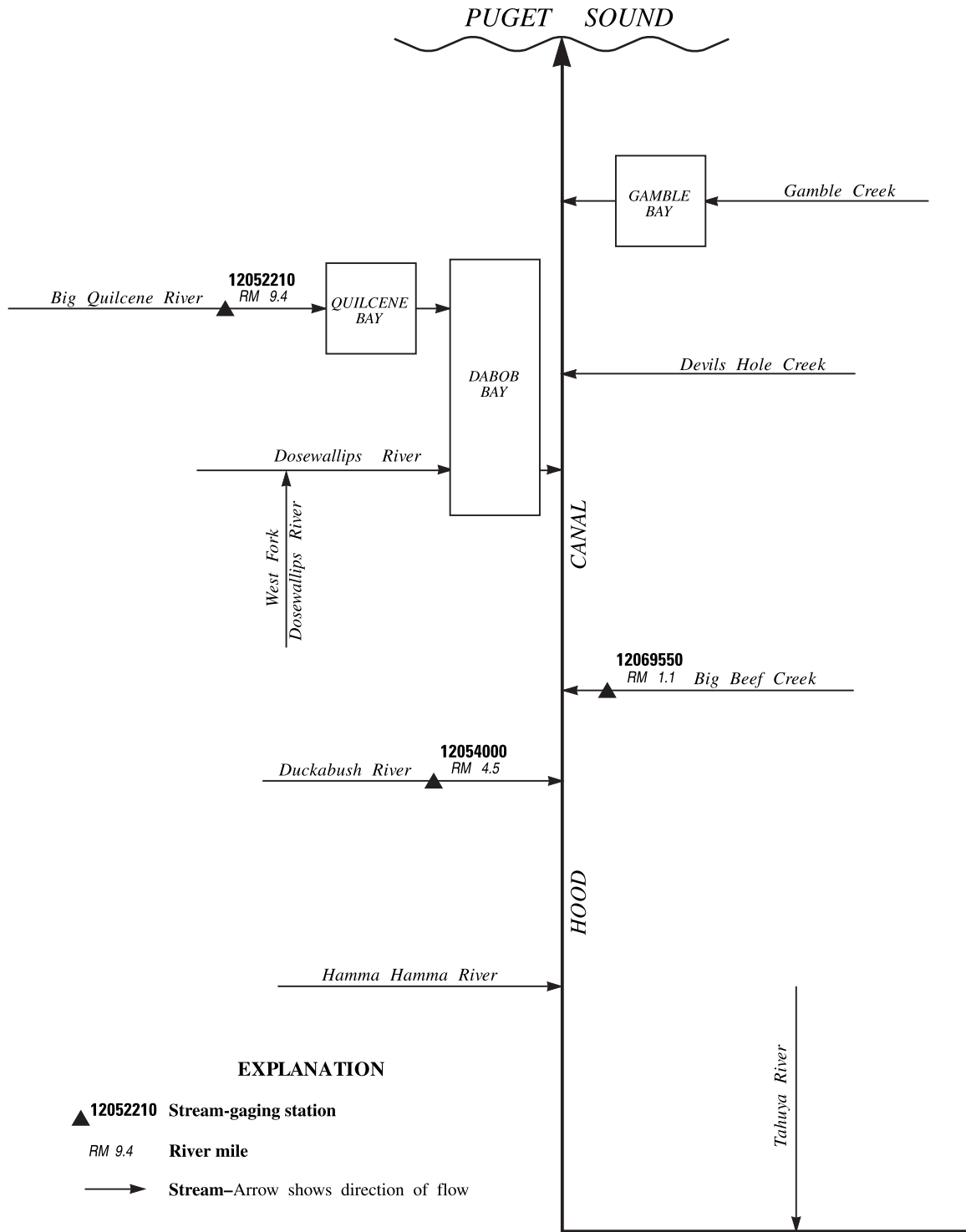


Figure 17. Schematic diagram showing surface-water stations in the Big Quilcene River, Duckabush River, and Big Beef Creek Basins.

BIG QUILCENE BASIN

12052210 BIG QUILCENE RIVER BELOW DIVERSION DAM, NEAR QUILCENE, WA

LOCATION.--Lat 47°47'05", long 122°58'42", in SW ¼ SE ¼ sec.31, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, on left bank, 5.5 mi southwest of Quilcene, and at mile 9.4.

DRAINAGE AREA.--49.4 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,009.23 ft above NGVD of 1929.

REMARKS.--Records fair except estimated daily discharges which are poor. Water for municipal use is diverted upstream by City of Port Townsend.

AVERAGE DISCHARGE.--9 years (water years 1995-2003), 153 ft³/s, 111,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,690 ft³/s Jan. 7, 2002, gage height, 5.48 ft, from rating curve extended above 2,000 ft³/s; maximum gage height, 6.41 ft Dec. 12, 1995; minimum discharge, 11 ft³/s Sept. 26, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,140 ft³/s, Mar. 14, gage height, 5.16 ft; minimum discharge, 23 ft³/s Nov. 29, result of regulation.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	26	28	129	236	62	e160	e85	e178	e111	54	30
2	28	26	27	707	221	60	e145	e87	e172	e104	53	29
3	30	25	27	769	187	59	e131	e90	e166	e97	52	29
4	28	25	27	1,260	177	57	e124	e89	e163	e93	51	29
5	28	26	27	743	164	56	e116	e90	e168	e90	49	30
6	28	33	28	497	157	54	e108	e98	e179	e87	49	29
7	27	94	27	421	144	54	e117	e98	e189	e87	48	31
8	27	156	27	357	132	51	e180	e93	e196	e85	46	30
9	28	72	32	306	120	84	e260	e94	e191	e83	45	29
10	29	46	76	257	116	84	e190	e89	e181	e87	44	29
11	28	33	69	240	107	83	e155	e87	e169	e86	47	29
12	27	110	517	274	100	263	e145	e88	e162	e87	45	29
13	27	120	451	255	94	2,180	e170	e91	e156	e86	42	29
14	28	83	1,090	229	94	2,160	e164	e97	e153	e83	41	29
15	28	64	898	222	115	1,540	e145	e103	e147	e80	39	30
16	28	117	746	173	108	653	e135	e97	e139	e77	39	30
17	27	117	420	159	104	425	e125	e93	e135	e73	37	29
18	28	84	261	166	95	339	e115	e87	e139	e68	37	28
19	28	78	196	176	89	319	e106	e82	e140	e65	37	29
20	28	71	155	167	81	e350	e98	e79	e136	e63	36	29
21	28	68	125	155	83	e304	e100	e74	e126	e64	35	28
22	28	62	106	289	77	e510	e104	e75	e123	e65	34	28
23	27	58	91	498	71	e348	e114	e87	e121	e66	34	29
24	28	49	79	433	66	e255	e121	e130	e119	e66	32	29
25	27	39	224	372	64	e215	e110	e176	e119	e64	32	29
26	27	36	265	572	68	e186	e100	e148	e118	e63	31	29
27	27	30	199	493	68	e160	e94	e122	e120	e62	31	29
28	27	25	169	378	65	e145	e92	e133	e122	e58	31	29
29	27	27	133	303	---	e135	e94	e176	e120	e56	30	29
30	26	28	116	263	---	e150	e85	e183	e113	e56	30	29
31	26	---	97	257	---	e179	---	e179	---	e56	30	---
TOTAL	857	1,828	6,733	11,520	3,203	11,520	3,903	3,300	4,460	2,368	1,241	874
MEAN	27.6	60.9	217	372	114	372	130	106	149	76.4	40.0	29.1
MAX	30	156	1,090	1,260	236	2,180	260	183	196	111	54	31
MIN	26	25	27	129	64	51	85	74	113	56	30	28
AC-FT	1,700	3,630	13,350	22,850	6,350	22,850	7,740	6,550	8,850	4,700	2,460	1,730

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2003, BY WATER YEAR (WY)

MEAN	69.7	169	237	255	188	192	153	172	168	116	58.3	36.5
MAX	328	316	330	395	385	372	214	308	439	360	176	73.8
(WY)	(1998)	(2000)	(1996)	(2002)	(1995)	(2003)	(1999)	(1999)	(1999)	(1999)	(1999)	(1997)
MIN	27.6	38.7	72.1	66.8	38.5	36.5	66.7	83.7	64.5	46.9	28.8	24.3
(WY)	(2003)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(1994)	(1994)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1994 - 2003

ANNUAL TOTAL	49,585	51,807		
ANNUAL MEAN	136	142		153
HIGHEST ANNUAL MEAN				235
LOWEST ANNUAL MEAN				53.4
HIGHEST DAILY MEAN	2,250	Jan 7	2,180	Mar 13
LOWEST DAILY MEAN	25	Nov 3	25	Nov 3
ANNUAL SEVEN-DAY MINIMUM	26	Oct 30	26	Oct 30
ANNUAL RUNOFF (AC-FT)	98,350		102,800	111,100
10 PERCENT EXCEEDS	219		263	310
50 PERCENT EXCEEDS	107		87	110
90 PERCENT EXCEEDS	28		28	28

e Estimated

DUCKABUSH RIVER BASIN

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW ¼ SW ¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi west of Brinnon, and at mile 4.5.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--August to December 1910 (gage height only), December 1910 to December 1911, June 1938 to current year. Published as "near Duckabush" water years 1910-11.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft above NGVD of 1929. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Records good except for period of Sept. 1-23, which is fair, and estimated daily discharges, which are poor. No regulation or diversion upstream from station. Chemical analyses April 1972 to September 1974.

AVERAGE DISCHARGE.--65 years (water years 1939-2003), 418 ft³/s, 85.30 in/yr, 302,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,880 ft³/s Jan. 7, 2002, gage height, 8.85 ft; minimum daily discharge, 41 ft³/s Oct. 23-30, 1987, Oct. 15-17, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 12	1445	5,100	6.44	Jan 26	1100	3,830	5.69
Dec 14	1630	4,990	6.38	Mar 13	2245	*6,950	*7.35
Jan 4	1200	5,210	6.50	Mar 22	0615	2,950	5.07
Jan 23	0100	2,580	4.78				

Minimum daily discharge, 43 ft³/s, Nov. 3, but may have been lower during period of estimated record Oct. 1 to Nov. 4.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e52	e44	191	438	861	185	474	305	596	406	167	74
2	e53	e44	176	2,350	669	178	411	329	551	327	155	71
3	e56	e43	166	2,310	567	172	358	334	524	297	144	70
4	e64	e44	164	3,760	495	166	326	310	549	289	139	69
5	e60	e45	160	1,960	443	162	304	290	633	307	133	68
6	e59	e90	153	1,060	397	159	289	266	768	309	130	67
7	e60	e92	146	871	358	155	357	249	868	314	127	72
8	e61	1,210	139	769	334	152	658	235	861	308	123	72
9	e62	750	159	689	313	207	873	228	766	282	123	71
10	e61	531	537	591	295	257	575	234	677	294	119	70
11	e59	483	540	605	280	300	485	263	585	311	115	74
12	e56	1,410	3,350	957	265	1,350	476	310	565	307	113	77
13	e55	1,020	1,960	733	255	6,140	560	336	556	311	110	69
14	e53	642	3,310	678	244	4,570	533	362	513	277	104	65
15	e51	416	3,120	553	345	2,930	451	341	455	261	102	64
16	e50	725	2,180	471	409	1,450	395	299	450	249	106	64
17	e49	699	1,080	428	333	949	351	272	502	228	104	64
18	e48	602	728	458	291	721	318	254	547	222	101	63
19	e47	1,330	590	488	270	823	293	241	463	223	99	91
20	e47	777	500	435	264	1,080	280	237	389	229	95	74
21	e47	557	425	424	273	897	287	247	350	232	92	67
22	e47	442	365	1,210	276	2,100	302	301	331	227	91	62
23	e47	347	329	2,020	247	1,090	308	434	333	223	89	58
24	e47	293	304	1,600	229	732	363	699	324	211	85	e58
25	e46	258	655	1,150	216	580	326	668	337	197	81	e56
26	e46	233	704	2,900	209	499	294	505	422	190	81	e56
27	e45	216	572	1,510	200	433	274	475	491	184	80	e54
28	e44	210	514	956	193	380	262	662	489	182	78	e54
29	e44	206	399	787	---	347	266	683	474	182	76	e53
30	e44	202	359	799	---	408	285	617	476	180	75	e53
31	e44	---	323	1,320	---	563	---	617	---	177	74	---
TOTAL	1,604	14,461	24,298	35,280	9,531	30,135	11,734	11,603	15,845	7,936	3,311	1,980
MEAN	51.7	482	784	1,138	340	972	391	374	528	256	107	66.0
MAX	64	1,410	3,350	3,760	861	6,140	873	699	868	406	167	91
MIN	44	43	139	424	193	152	262	228	324	177	74	53
AC-FT	3,180	28,680	48,200	69,980	18,900	59,770	23,270	23,010	31,430	15,740	6,570	3,930
CFSM	0.78	7.25	11.8	17.1	5.12	14.6	5.88	5.63	7.94	3.85	1.61	0.99
IN.	0.90	8.09	13.59	19.74	5.33	16.86	6.56	6.49	8.86	4.44	1.85	1.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

MEAN	277	537	601	528	496	393	395	552	572	357	172	134
MAX	954	1,446	1,470	1,180	1,050	972	656	1,043	1,146	936	598	523
(WY)	(1998)	(1984)	(1967)	(1953)	(1991)	(2003)	(1943)	(1956)	(1999)	(1999)	(1999)	(1978)
MIN	44.4	79.6	167	116	133	138	214	314	242	136	75.1	57.6
(WY)	(1988)	(1994)	(1977)	(1979)	(1985)	(1985)	(1973)	(1977)	(1992)	(1977)	(1944)	(1942)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1938 - 2003

ANNUAL TOTAL	159,016	167,718	
ANNUAL MEAN	436	460	418
HIGHEST ANNUAL MEAN			670
LOWEST ANNUAL MEAN			204
HIGHEST DAILY MEAN	6,920	Jan 7	6,140
LOWEST DAILY MEAN	43	Nov 3	43
ANNUAL SEVEN-DAY MINIMUM	44	Oct 28	44
ANNUAL RUNOFF (AC-FT)	315,400		332,700
ANNUAL RUNOFF (CFSM)	6.55		6.91
ANNUAL RUNOFF (INCHES)	88.95		93.82
10 PERCENT EXCEEDS	747		869
50 PERCENT EXCEEDS	310		297
90 PERCENT EXCEEDS	61		59

e Estimated