



Figure 12. Location of surface-water stations in the Big Quilcene and Duckabush River Basins.

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

LOCATION.--Lat 47°47'05", long 122°58'42", in SW $\frac{1}{4}$ SE $\frac{1}{4}$, 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 for period Oct. 15 to Feb. 11, which is poor. Water for municipal use is diverted upstream by City of Port Townsend.

AVERAGE DISCHARGE.--10 years (water years 1995-2004), 151 ft³/s, 109,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,620 ft³/s, Dec. 12, 1995, revised, gage height, 6.41 ft, revised, from rating curve extended above 2,000 ft³/s; minimum discharge, 11 ft³/s, Sept. 26, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,750 ft³/s, Oct. 20, gage height, 4.15 ft; minimum discharge, 26 ft³/s, Oct. 14, result of regulation, gage height, 0.87 ft.

REVISIONS.--The maximum discharges for some water years have been revised, as shown in the following table. They supersede figures published in WDR-WA-96-1, WDR-WA-97-1, WDR-WA-98-1, WDR-WA-99-1, and WDR-WA-00-1.

| Water Year | Date | Discharge (ft ³ /s) | Gage height (ft) |
|------------|---------|--------------------------------|------------------|
| 1996 | Dec. 12 | 5,620 | 6.41 |
| 1997 | Mar. 18 | 4,990 | 6.13 |
| 1998 | Oct. 9 | 2,220 | 4.54 |
| 1999 | Dec. 13 | 2,290 | 4.59 |
| 2000 | Nov. 11 | 1,890 | 4.27 |

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1 | 29 | 68 | 235 | 106 | 180 | 136 | 148 | 130 | e145 | 79 | 46 | e40 |
| 2 | 29 | 68 | 195 | 96 | 158 | 123 | 136 | 145 | 145 | 78 | 45 | e37 |
| 3 | 29 | 61 | 188 | 90 | 145 | 114 | 128 | 148 | 137 | 78 | 45 | e36 |
| 4 | 30 | 56 | 195 | 82 | 135 | 106 | 126 | 147 | 137 | 76 | 49 | e35 |
| 5 | 30 | 56 | 386 | 80 | 127 | 101 | 122 | 144 | 146 | 74 | e47 | e34 |
| 6 | 30 | 53 | 974 | 79 | 137 | 90 | 117 | 131 | 148 | 73 | e100 | e34 |
| 7 | 29 | 50 | 458 | 86 | 132 | 97 | 114 | 121 | 135 | e72 | e57 | e35 |
| 8 | 30 | 52 | 290 | 177 | 122 | 110 | 110 | 118 | 121 | e68 | e50 | e35 |
| 9 | 29 | 48 | 223 | 299 | 110 | 153 | 107 | 115 | 119 | e67 | 47 | e35 |
| 10 | 28 | 44 | 188 | 336 | 103 | 150 | 107 | 116 | 123 | e66 | 44 | e35 |
| 11 | 29 | 46 | 170 | 250 | 101 | 136 | 115 | 119 | e120 | e65 | 42 | e35 |
| 12 | 41 | 42 | 159 | 216 | 98 | 127 | 131 | 112 | e110 | e64 | 41 | e38 |
| 13 | 31 | 43 | 146 | 218 | 95 | 119 | 134 | 106 | e107 | 62 | 41 | e38 |
| 14 | 28 | 45 | 140 | 355 | 96 | 112 | 132 | 101 | 106 | 61 | 40 | e35 |
| 15 | 48 | 44 | 125 | 372 | 110 | 106 | 124 | 101 | e101 | 63 | 39 | e35 |
| 16 | 290 | 56 | 178 | 284 | 157 | 101 | 118 | 104 | 97 | 63 | 39 | e35 |
| 17 | 468 | 70 | 182 | 228 | 189 | 101 | 117 | 103 | 94 | 61 | 37 | e34 |
| 18 | 301 | 790 | 151 | 199 | 275 | 98 | 113 | 104 | 96 | 63 | 36 | e35 |
| 19 | 240 | 1,100 | 145 | 172 | 220 | 93 | 150 | 113 | 100 | 61 | 36 | e35 |
| 20 | 1,010 | 470 | 150 | 154 | 177 | 88 | 224 | 121 | 99 | e60 | 42 | e34 |
| 21 | 973 | 295 | 138 | 143 | 152 | 85 | 170 | 127 | 99 | e57 | 41 | e34 |
| 22 | 458 | 211 | 128 | 132 | 135 | 88 | 143 | 130 | 102 | 55 | e42 | e34 |
| 23 | 288 | 172 | 137 | 125 | 121 | 97 | 134 | 121 | 105 | 53 | e41 | e34 |
| 24 | 198 | 147 | 427 | 117 | 148 | 111 | 125 | 111 | 108 | 53 | e44 | e33 |
| 25 | 147 | 129 | 353 | 107 | 166 | 214 | 117 | 106 | 108 | 52 | e51 | e35 |
| 26 | 123 | 115 | 234 | 103 | 189 | 223 | 120 | 111 | 104 | 52 | e49 | e36 |
| 27 | 109 | 100 | 187 | 96 | 183 | 173 | 140 | e120 | 95 | 51 | e38 | e36 |
| 28 | 98 | 466 | 155 | 94 | 162 | 154 | 138 | e150 | 86 | 50 | e36 | e36 |
| 29 | 86 | 528 | 131 | 138 | 149 | 155 | 126 | e145 | 80 | 49 | e36 | e35 |
| 30 | 81 | 323 | 120 | 347 | --- | 179 | 122 | e130 | 79 | 48 | e35 | e34 |
| 31 | 74 | --- | 116 | 233 | --- | 168 | --- | 134 | --- | 47 | e35 | --- |
| TOTAL | 5,414 | 5,748 | 7,004 | 5,514 | 4,272 | 3,908 | 3,908 | 3,784 | 3,352 | 1,921 | 1,371 | 1,057 |
| MEAN | 175 | 192 | 226 | 178 | 147 | 126 | 130 | 122 | 112 | 62.0 | 44.2 | 35.2 |
| MAX | 1,010 | 1,100 | 974 | 372 | 275 | 223 | 224 | 150 | 148 | 79 | 100 | 40 |
| MIN | 28 | 42 | 116 | 79 | 95 | 85 | 107 | 101 | 79 | 47 | 35 | 33 |
| AC-FT | 10,740 | 11,400 | 13,890 | 10,940 | 8,470 | 7,750 | 7,750 | 7,510 | 6,650 | 3,810 | 2,720 | 2,100 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2004, BY WATER YEAR (WY)

| | 80.2 | 172 | 236 | 247 | 185 | 186 | 151 | 167 | 163 | 111 | 57.0 | 36.4 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 80.2 | 172 | 236 | 247 | 185 | 186 | 151 | 167 | 163 | 111 | 57.0 | 36.4 |
| 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) |

BIG QUILCENE BASIN

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

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1994 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 60,555 | | 47,253 | | | |
| ANNUAL MEAN | 166 | | 129 | | 151 | |
| HIGHEST ANNUAL MEAN | | | | | 235 | |
| LOWEST ANNUAL MEAN | | | | | 53.4 | |
| HIGHEST DAILY MEAN | 2,180 | Mar 13 | 1,100 | Nov 19 | 2,250 | Jan 7, 2002 |
| LOWEST DAILY MEAN | 28 | Sep 18 | 28 | Oct 10 | 19 | Oct 5, 1996 |
| ANNUAL SEVEN-DAY MINIMUM | 29 | Sep 17 | 29 | Oct 5 | 21 | Sep 19, 1998 |
| ANNUAL RUNOFF (AC-FT) | 120,100 | | 93,730 | | 109,300 | |
| 10 PERCENT EXCEEDS | 329 | | 221 | | 306 | |
| 50 PERCENT EXCEEDS | 104 | | 108 | | 109 | |
| 90 PERCENT EXCEEDS | 30 | | 35 | | 29 | |

e Estimated

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW¼SW¼, 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 estimated daily discharges, which are fair. No regulation or diversion upstream from station. Chemical analyses April 1972 to September 1974.

AVERAGE DISCHARGE.--66 years (water years 1939-2004), 418 ft³/s, 85.30 in/yr, 302,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 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) |
|--------|------|--------------------------------|------------------|--------|------|--------------------------------|------------------|
| Oct 16 | 2145 | 5,810 | 6.81 | Dec 6 | 0030 | 4,180 | 5.91 |
| Oct 20 | 1830 | *9,890 | *8.53 | Jan 14 | 1045 | 2,570 | 4.77 |
| Nov 19 | 0000 | 5,730 | 6.77 | | | | |

Minimum daily discharge, 51 ft³/s, Oct. 4-5, but may have been lower during the period of Oct. 1-7.

REVISIONS.--The maximum discharge for water year 2002 has been revised to 10,800 ft³/s, Jan. 7, 2002, gage height 8.85 ft, superseding figures published in reports for 2002 and 2003.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| 1 | e52 | 248 | 506 | 224 | 510 | 307 | 369 | 530 | 387 | 297 | 113 | 100 |
| 2 | e52 | 234 | 529 | 212 | 449 | 273 | 327 | 613 | 386 | 283 | 111 | 101 |
| 3 | e51 | 220 | 748 | 198 | 399 | 248 | 315 | 607 | 407 | 262 | 111 | 92 |
| 4 | e51 | 209 | 577 | 189 | 370 | 230 | 340 | 558 | 497 | 244 | 118 | 87 |
| 5 | e51 | 196 | 1,450 | 188 | 332 | 225 | 333 | 497 | 559 | 231 | 111 | 84 |
| 6 | e54 | 191 | 2,180 | 188 | 381 | 217 | 325 | 419 | 505 | 240 | 254 | 81 |
| 7 | e69 | 184 | 923 | 202 | 365 | 271 | 328 | 395 | 413 | 234 | 276 | 78 |
| 8 | 100 | 180 | 630 | 713 | 316 | 389 | 328 | 413 | 380 | 208 | 174 | 76 |
| 9 | 144 | 173 | 501 | 1,190 | 287 | 494 | 329 | 384 | 460 | 204 | 141 | 78 |
| 10 | 117 | 168 | 430 | 1,260 | 266 | 442 | 352 | 384 | 466 | 199 | 126 | 76 |
| 11 | 97 | 212 | 378 | 775 | 254 | 361 | 409 | 368 | 386 | 190 | 117 | 238 |
| 12 | 536 | 172 | 393 | 662 | 249 | 330 | 482 | 372 | 339 | 178 | 111 | 152 |
| 13 | 358 | 161 | 381 | 850 | 240 | 307 | 441 | 361 | 411 | 180 | 108 | 198 |
| 14 | 195 | 153 | 364 | 2,170 | 273 | 288 | 405 | 353 | 386 | 186 | 104 | 195 |
| 15 | 254 | 169 | 321 | 1,650 | 419 | 280 | 359 | 385 | 333 | 183 | 102 | 259 |
| 16 | 2,870 | 226 | 508 | 978 | 483 | 266 | 325 | 408 | 323 | 178 | 99 | 204 |
| 17 | 3,840 | 382 | 505 | 684 | 545 | 271 | 309 | 397 | 351 | 167 | 96 | 207 |
| 18 | 1,320 | 3,560 | 395 | 579 | 825 | 292 | 292 | 453 | 408 | 165 | 94 | 183 |
| 19 | 1,290 | 3,060 | 394 | 518 | 567 | 283 | 395 | 537 | 402 | 161 | 91 | 164 |
| 20 | 5,470 | 1,020 | 511 | 455 | 437 | 254 | 558 | 536 | 373 | 156 | 90 | 147 |
| 21 | 3,180 | 640 | 422 | 393 | 357 | 242 | 430 | 550 | 406 | 149 | 89 | 130 |
| 22 | 1,340 | 488 | 353 | 356 | 308 | 270 | 370 | 535 | 435 | 141 | 108 | 122 |
| 23 | 865 | 416 | 365 | 337 | 279 | 325 | 362 | 462 | 446 | 138 | 96 | 119 |
| 24 | 612 | 369 | 976 | 327 | 358 | 429 | 344 | 405 | 438 | 139 | 102 | 110 |
| 25 | 500 | 340 | 686 | 300 | 441 | 642 | 325 | 396 | 405 | 139 | 249 | 104 |
| 26 | 426 | 308 | 484 | 282 | 466 | 692 | 405 | 518 | 359 | 133 | 277 | 98 |
| 27 | 374 | 283 | 386 | 265 | 492 | 590 | 558 | 604 | 311 | 128 | 164 | 94 |
| 28 | 346 | 1,140 | 326 | 283 | 416 | 491 | 488 | 586 | 293 | 124 | 134 | 89 |
| 29 | 319 | 1,320 | 288 | 463 | 356 | 469 | 412 | 479 | 297 | 123 | 118 | 86 |
| 30 | 291 | 681 | 260 | 1,410 | --- | 516 | 422 | 470 | 301 | 121 | 109 | 83 |
| 31 | 266 | --- | 240 | 695 | --- | 450 | --- | 452 | --- | 117 | 103 | --- |
| TOTAL | 25,490 | 17,103 | 17,410 | 18,996 | 11,440 | 11,144 | 11,437 | 14,427 | 11,863 | 5,598 | 4,096 | 3,835 |
| MEAN | 822 | 570 | 562 | 613 | 394 | 359 | 381 | 465 | 395 | 181 | 132 | 128 |
| MAX | 5,470 | 3,560 | 2,180 | 2,170 | 825 | 692 | 558 | 613 | 559 | 297 | 277 | 259 |
| MIN | 51 | 153 | 240 | 188 | 240 | 217 | 292 | 353 | 293 | 117 | 89 | 76 |
| AC-FT | 50,560 | 33,920 | 34,530 | 37,680 | 22,690 | 22,100 | 22,690 | 28,620 | 23,530 | 11,100 | 8,120 | 7,610 |
| CFSM | 12.4 | 8.57 | 8.45 | 9.21 | 5.93 | 5.41 | 5.73 | 7.00 | 5.95 | 2.72 | 1.99 | 1.92 |
| IN. | 14.26 | 9.57 | 9.74 | 10.63 | 6.40 | 6.23 | 6.40 | 8.07 | 6.64 | 3.13 | 2.29 | 2.15 |

DUCKABUSH RIVER BASIN

12054000 DUCKABUSH RIVER NEAR BRINNON, WA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2004, BY WATER YEAR (WY) | | | | | | | | | | | | |
| MEAN | 285 | 537 | 601 | 529 | 494 | 393 | 395 | 551 | 569 | 355 | 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 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1938 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 187,358 | | 152,839 | | | |
| ANNUAL MEAN | 513 | | 418 | | 418 | |
| HIGHEST ANNUAL MEAN | | | | | 670 | |
| LOWEST ANNUAL MEAN | | | | | 204 | |
| HIGHEST DAILY MEAN | 6,140 | Mar 13 | 5,470 | Oct 20 | 6,920 | Jan 7, 2002 |
| LOWEST DAILY MEAN | 51 | Oct 3 | 51 | Oct 3 | 41 | Oct 23, 1987 |
| ANNUAL SEVEN-DAY MINIMUM | 52 | Sep 29 | 54 | Oct 1 | 41 | Oct 23, 1987 |
| ANNUAL RUNOFF (AC-FT) | 371,600 | | 303,200 | | 302,500 | |
| ANNUAL RUNOFF (CFSM) | 7.72 | | 6.28 | | 6.28 | |
| ANNUAL RUNOFF (INCHES) | 104.81 | | 85.50 | | 85.30 | |
| 10 PERCENT EXCEEDS | 956 | | 633 | | 802 | |
| 50 PERCENT EXCEEDS | 314 | | 328 | | 311 | |
| 90 PERCENT EXCEEDS | 75 | | 107 | | 97 | |

e Estimated