12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

Puget Sound Basin
Nooksack Subbasin

LOCATION.--Lat 48°54′22″, long 121°50′35″ referenced to North American Datum of 1927, in SE ¼ SW ¼ sec.36, T.40 N., R.7 E., Whatcom County, WA, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi downstream from Cascade Creek, 0.3 mi downstream from Deadhorse Creek, 4.8 mi east of Glacier, 5.5 mi upstream from Glacier Creek, and at mile 63.1.

DRAINAGE AREA.--105 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1937 to current year. Published as "Nooksack River above Cascade Creek, near Glacier" 1937-58 and as "Nooksack River below Cascade Creek, near Glacier" 1958-66.

REVISED RECORDS.--WSP 1092: 1946.

GAGE.--Water-stage recorder. Elevation of gage is 1,245 ft above NGVD of 1929, from river-profile map. Supplementary gage on left bank, at datum 1.19 ft lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Records fair. No diversion upstream from station. Some regulation at low flow by powerplant at Excelsior. Summer flows augmented by glacier melt. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--71 years (water years 1938-2008), 787 ft^3/s, 101.88 in/yr, 570,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft^3/s, Oct. 16, 2003, from slope-area measurement, gage height, 11.97 ft, from floodmark; minimum discharge, 60 ft^3/s, Mar. 12, 1969; minimum daily, 98 ft^3/s, Jan. 8, 1979, result of freeze up.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 7	1915	4,760	6.43
Dec 4	0745	*7,760	*8.19
May 20	1445	5,240	6.74
Jun 30	2200	4,060	5.94
Jul 3	1630	4,060	5.94
Aug 21	0915	3,940	5.86
Aug 29	2015	5,280	6.77

Minimum discharge, 145 ft^3/s, Feb. 4, gage height, 1.44 ft.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,120	402	295	255	175	407	190	483	2,120	3,650	1,470	818
2	1,640	373	299	272	169	353	186	433	1,870	3,360	1,090	686
3	1,190	475	2,670	324	163	320	184	443	1,660	3,510	906	619
4	921	716	6,280	451	159	301	182	518	1,710	2,800	900	586
5	698	496	2,570	546	164	278	178	710	1,490	2,310	943	602
6	582	440	1,410	419	161	263	180	833	1,540	2,230	1,040	628
7	1,980	506	1,010	350	173	256	184	920	1,380	1,780	1,140	594
8	1,510	570	794	320	175	264	186	849	1,270	1,800	1,120	558
9	882	972	684	297	177	265	181	733	1,250	2,000	1,030	533
10	1,120	1,170	600	302	207	351	185	715	1,260	1,800	1,340	479
11	865	717	543	338	210	715	184	799	1,080	1,400	864	481
12	636	835	495	338	214	537	206	705	1,060	1,360	769	501
13	534	723	456	334	222	435	369	673	1,460	1,520	786	462
14	481	590	425	340	205	385	481	895	1,560	1,500	894	429
15	535	1,320	456	338	203	354	403	1,620	1,540	1,340	1,060	454
16	621	1,910	409	299	204	324	347	2,430	1,700	1,270	1,090	466
17	510	1,110	400	278	196	306	331	3,570	1,700	1,260	1,210	487
18	543	823	386	263	193	292	327	3,980	1,460	1,200	1,180	523
19	1,270	666	397	254	196	277	302	3,510	1,310	1,140	1,080	497
20	802	576	387	240	202	271	282	4,620	1,450	1,130	1,840	451
21	646	507	343	219	205	258	265	3,040	1,960	1,170	2,950	505
22	1,380	466	361	210	205	243	256	2,030	2,080	1,190	1,390	526
23	1,800	430	396	205	210	267	253	1,820	1,780	1,060	1,070	419
24	1,800	402	423	200	210	265	252	2,000	1,570	960	1,320	392
25	1,100	377	368	192	207	244	245	2,660	1,520	1,080	1,390	557
26	755	368	343	191	207	242	241	2,970	1,550	1,090	999	441
27	641	360	316	190	213	226	271	2,940	1,560	1,100	1,190	390
28	570	337	307	182	229	214	475	2,810	2,360	1,040	1,190	351
29	522	321	294	183	264	211	723	2,630	3,240	969	2,320	346
30	470	306	280	178	---	203	585	2,270	3,640	1,370	1,910	379
31	429	---	264	180	---	199	---	2,060	---	907	1,080	---
Total	28,553	19,264	24,661	8,688	5,718	9,526	8,634	56,669	51,130	50,296	38,561	15,160
Mean	921	642	796	280	197	307	288	1,828	1,704	1,622	1,244	505
Max	1,980	1,910	6,280	546	264	715	723	4,620	3,640	3,650	2,950	818
Min	429	306	264	178	159	199	178	433	1,060	907	769	346
Ac-ft	56,630	38,210	48,920	17,230	11,340	18,890	17,130	112,400	101,400	99,760	76,490	30,070
Cfsm	8.77	6.12	7.58	2.67	1.88	2.93	2.74	17.4	16.2	15.5	11.8	4.81
In.	10.12	6.82	8.74	3.08	2.03	3.37	3.06	20.08	18.11	17.82	13.66	5.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	675	766	650	530	465	421	567	1,132	1,532	1,309	803	578
Max	2,010	2,143	1,354	1,193	1,401	1,081	930	1,828	2,459	2,112	1,582	1,122
(WY)	(2004)	(1991)	(1940)	(2005)	(1991)	(2007)	(1990)	(2008)	(1948)	(1974)	(1999)	(1978)
Min	210	216	232	147	165	191	253	686	893	725	473	353
(WY)	(1988)	(1953)	(1979)	(1979)	(1956)	(1948)	(1975)	(1962)	(1941)	(1940)	(1941)	(1989)

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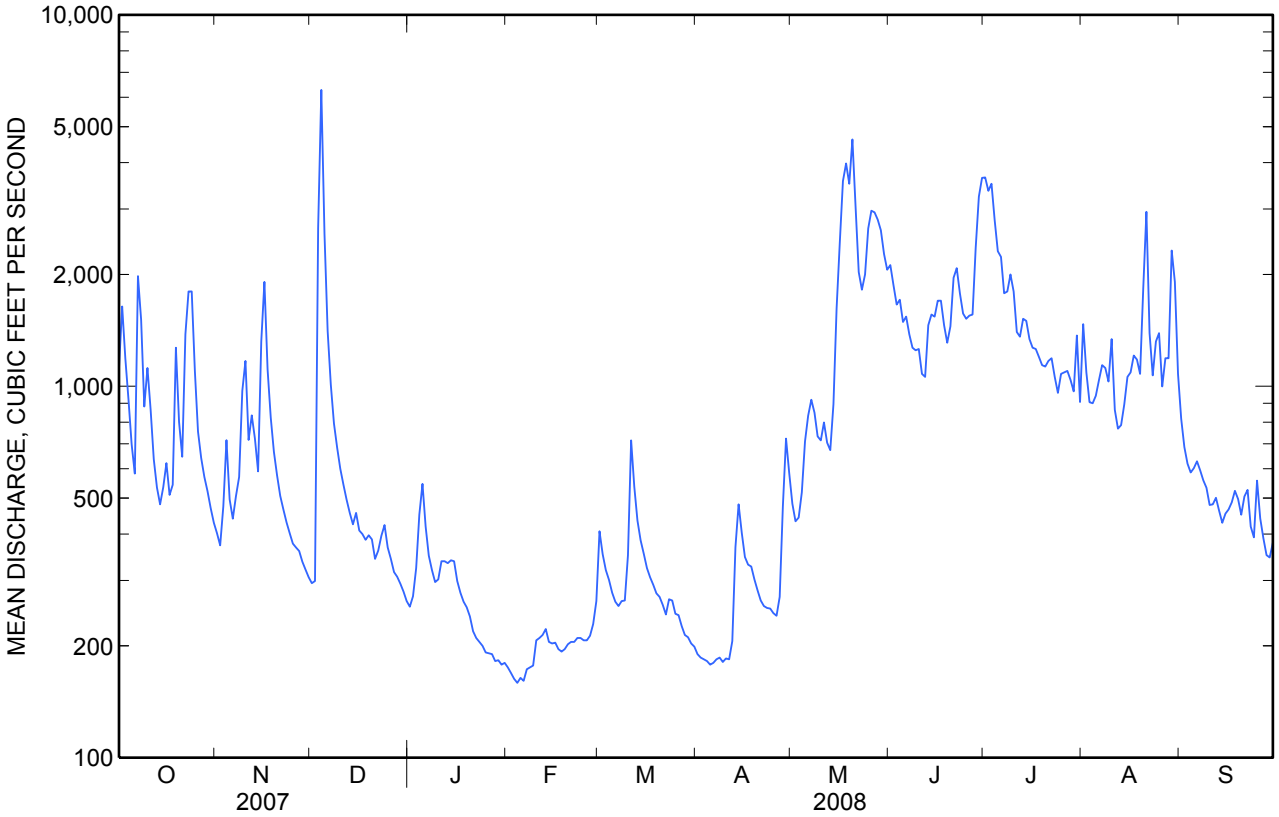
SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1938 - 2008	
Annual total	318,812		316,860			
Annual mean	873		866		787	
Highest annual mean					1,090	1997
Lowest annual mean					540	1944
Highest daily mean	6,280	Dec 4	6,280	Dec 4	10,800	Oct 17, 2003
Lowest daily mean	229	Feb 3	159	Feb 4	98	Jan 8, 1979
Annual seven-day minimum	250	Jan 29	166	Feb 1	108	Jan 4, 1979
Annual runoff (ac-ft)	632,400		628,500		570,400	
Annual runoff (cfsm)	8.32		8.25		7.50	
Annual runoff (inches)	112.95		112.26		101.88	
10 percent exceeds	1,710		1,880		1,550	
50 percent exceeds	613		530		600	
90 percent exceeds	307		205		260	



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WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: November 2007 to current year.

INSTRUMENTATION.--Water-temperature sensor with a 15-minute logging interval, interfaced with a data collection platform for satellite telemetry.

REMARKS.--Temperature records are good.

EXTREMES FOR PERIOD OF RECORD.--
WATER TEMPERATURE: Maximum, 10.4 °C, June 27, 28, 2008; minimum, 0.1 °C, January 22, 2008.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 10.4 °C, June 27, 28, 2008; minimum, 0.1 °C, January 22, 2008.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	---	---	---	---	---	---	2.4	1.8	2.0	2.6	1.7	2.1
2	---	---	---	---	---	---	2.1	1.7	1.9	2.9	2.5	2.7
3	---	---	---	---	---	---	2.3	1.7	2.1	3.0	2.7	2.8
4	---	---	---	---	---	---	3.6	2.2	3.2	3.0	2.6	2.8
5	---	---	---	---	---	---	3.9	3.5	3.7	3.0	2.5	2.7
6	---	---	---	---	---	---	3.6	2.8	3.1	2.9	2.4	2.7
7	---	---	---	---	---	---	3.1	2.6	2.8	2.6	2.2	2.4
8	---	---	---	---	---	---	2.6	1.8	2.1	2.8	2.1	2.4
9	---	---	---	---	---	---	2.5	1.8	2.1	3.0	2.4	2.7
10	---	---	---	---	---	---	2.5	1.7	2.0	2.8	2.0	2.4
11	---	---	---	---	---	---	3.0	1.7	2.4	3.0	2.6	2.9
12	---	---	---	---	---	---	3.1	2.7	2.9	3.3	2.8	3.1
13	---	---	---	---	---	---	3.0	2.5	2.8	3.3	3.1	3.2
14	---	---	---	---	---	---	3.3	2.7	3.1	3.4	2.3	3.1
15	---	---	---	---	---	---	3.3	2.9	3.0	2.3	1.8	2.0
16	---	---	---	---	---	---	3.3	2.9	3.1	2.3	1.6	2.0
17	---	---	---	---	---	---	3.1	2.3	2.6	2.4	1.9	2.2
18	---	---	---	---	---	---	2.6	2.2	2.4	2.4	1.7	2.2
19	---	---	---	---	---	---	2.8	2.1	2.5	2.4	1.9	2.2
20	---	---	---	---	---	---	2.8	2.2	2.5	2.8	1.6	2.4
21	---	---	---	---	---	---	2.5	1.6	2.0	1.6	0.4	0.7
22	---	---	---	---	---	---	2.5	2.2	2.4	0.6	0.1	0.4
23	---	---	---	---	---	---	2.9	2.4	2.7	0.6	0.2	0.4
24	---	---	---	---	---	---	3.0	2.6	2.8	1.3	0.5	0.8
25	---	---	---	---	---	---	2.8	2.2	2.6	1.0	0.2	0.5
26	---	---	---	---	---	---	2.4	1.7	2.1	1.0	0.6	0.7
27	---	---	---	---	---	---	2.6	2.2	2.4	1.8	0.8	1.3
28	---	---	---	3.2	2.7	3.0	2.5	1.3	1.8	1.6	1.0	1.3
29	---	---	---	3.1	2.0	2.6	2.5	1.8	2.1	1.4	0.4	0.8
30	---	---	---	2.6	2.0	2.3	2.1	1.6	1.9	2.0	0.6	1.4
31	---	---	---	---	---	---	2.5	1.8	2.2	1.9	0.7	1.3
Month	---	---	---	---	---	---	3.9	1.3	2.5	3.4	0.1	2.0

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TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	1.8	1.5	1.6	3.4	2.0	2.9	4.2	1.5	2.9	5.7	3.4	4.4
2	1.8	1.4	1.6	4.0	2.7	3.3	4.8	2.1	3.5	6.2	3.2	4.7
3	1.5	0.5	1.1	3.5	2.1	2.8	4.8	2.7	3.8	6.0	4.2	5.1
4	2.0	1.2	1.6	4.2	2.1	3.2	4.1	3.4	3.7	8.0	4.0	5.9
5	2.0	1.4	1.8	3.6	2.4	3.2	4.8	3.2	3.9	6.4	4.1	5.2
6	1.8	1.2	1.6	4.1	2.4	3.3	5.1	3.6	4.3	7.0	4.0	5.2
7	1.2	0.6	0.8	4.5	3.4	3.9	4.8	3.7	4.2	6.0	4.2	5.0
8	1.4	0.2	0.9	4.6	3.6	4.0	4.7	3.4	4.1	6.0	3.7	4.7
9	2.2	1.4	1.9	4.5	3.1	3.8	5.3	3.4	4.3	7.6	3.8	5.5
10	2.5	2.2	2.3	4.3	3.4	3.9	5.5	3.0	4.4	5.8	4.4	5.1
11	2.8	2.2	2.5	3.4	2.3	2.7	5.8	3.9	4.7	5.4	4.3	4.8
12	3.0	2.6	2.8	4.0	2.5	3.2	7.0	3.7	5.2	6.5	4.0	5.1
13	3.2	2.2	2.7	4.1	3.0	3.5	5.5	4.0	4.6	5.8	4.4	5.1
14	2.9	2.1	2.5	4.2	3.3	3.8	4.8	3.4	4.0	6.1	4.5	5.2
15	2.9	2.5	2.7	4.3	3.4	3.9	4.1	2.7	3.5	8.1	3.9	5.5
16	3.6	2.4	3.0	4.0	3.2	3.7	5.2	3.3	4.2	7.6	3.5	5.1
17	3.0	2.2	2.6	4.4	2.9	3.7	5.5	3.8	4.7	6.9	3.7	4.9
18	2.6	2.0	2.4	4.4	3.5	3.9	4.9	3.2	3.8	6.6	3.6	4.8
19	2.7	2.0	2.4	4.6	3.2	3.8	4.9	2.8	3.8	5.9	4.2	4.9
20	3.3	2.6	2.9	4.3	2.8	3.6	4.4	2.7	3.5	4.5	3.9	4.2
21	3.3	2.3	2.8	4.1	2.7	3.4	4.2	2.1	3.1	5.2	3.8	4.5
22	3.6	2.7	3.1	4.5	2.4	3.5	6.0	2.2	4.1	5.9	4.3	5.0
23	3.4	2.7	3.1	4.1	2.1	3.3	5.2	3.9	4.6	5.9	4.4	5.1
24	3.3	2.1	2.8	4.3	2.0	3.0	4.7	4.0	4.3	8.6	4.5	6.1
25	3.6	2.6	3.2	3.6	2.0	3.0	5.6	3.3	4.4	7.6	4.8	5.8
26	3.8	2.7	3.3	3.4	1.9	2.8	7.3	3.1	5.1	6.7	4.5	5.4
27	3.9	3.2	3.6	3.1	2.1	2.6	6.2	4.6	5.5	7.9	4.7	5.8
28	4.2	3.4	3.7	3.0	1.7	2.4	6.1	4.4	5.1	7.4	4.4	5.8
29	4.2	3.1	3.6	3.0	1.9	2.5	5.2	2.0	3.8	6.2	4.9	5.4
30	---	---	---	4.4	1.8	3.1	4.9	2.5	3.7	8.2	4.6	6.0
31	---	---	---	4.1	2.0	3.2	---	---	---	8.3	4.3	6.1
Month	4.2	0.2	2.4	4.6	1.7	3.3	7.3	1.5	4.2	8.6	3.2	5.2

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	6.1	5.1	5.4	9.9	6.3	7.8	8.0	7.8	7.9	8.5	7.7	8.1
2	6.1	4.8	5.3	9.4	6.5	7.7	8.0	7.9	8.0	8.4	7.8	8.0
3	5.9	4.8	5.3	7.7	6.8	7.0	8.3	7.9	8.0	8.8	7.9	8.3
4	6.1	4.7	5.3	7.4	6.5	7.0	8.6	8.2	8.4	9.0	8.3	8.6
5	5.9	4.9	5.4	7.3	6.7	7.0	8.9	8.5	8.6	8.9	8.4	8.6
6	7.2	4.5	5.7	7.2	6.8	7.0	9.0	8.7	8.8	9.1	8.4	8.6
7	6.6	5.1	5.8	7.9	6.8	7.2	9.2	8.8	9.0	9.1	8.5	8.8
8	7.1	5.0	5.9	8.2	7.2	7.7	9.2	8.9	9.1	9.1	8.4	8.8
9	6.3	5.1	5.7	8.2	7.5	7.9	9.3	9.0	9.1	9.1	8.5	8.8
10	6.6	4.3	5.4	8.2	7.6	7.8	9.0	8.6	8.7	9.0	8.2	8.6
11	6.2	5.2	5.7	8.0	7.2	7.6	8.7	8.4	8.5	9.0	8.3	8.6
12	8.3	5.2	6.5	8.3	7.5	7.8	8.8	8.6	8.7	9.1	8.5	8.8
13	8.4	5.7	6.8	8.4	7.8	8.1	9.0	8.8	8.8	9.0	8.3	8.6
14	9.1	4.9	6.7	8.4	7.8	8.1	9.1	8.9	9.0	8.9	8.2	8.6
15	9.6	5.4	7.2	8.4	7.7	8.1	9.3	9.1	9.2	9.1	8.4	8.7
16	9.6	5.0	7.0	8.5	7.8	8.1	9.4	9.2	9.3	9.1	8.5	8.8
17	6.9	5.3	6.2	8.5	7.9	8.2	9.4	9.3	9.3	9.1	8.6	8.8
18	7.2	5.3	6.1	8.5	8.0	8.3	9.4	9.2	9.3	9.0	8.6	8.8
19	7.2	5.0	6.1	8.7	8.1	8.4	9.2	9.1	9.1	9.1	8.7	8.9
20	9.1	5.4	7.0	8.8	8.2	8.5	9.1	8.9	9.0	9.1	8.8	8.9
21	6.9	5.7	6.3	8.9	8.3	8.6	8.9	8.8	8.9	8.8	8.5	8.6
22	7.3	5.5	6.3	8.9	8.4	8.7	8.8	8.4	8.6	8.6	8.2	8.3
23	8.2	4.8	6.4	8.9	8.2	8.5	9.0	8.6	8.8	8.2	7.5	7.8
24	7.9	5.4	6.6	8.7	8.0	8.2	9.0	8.9	9.0	8.0	7.8	7.9
25	9.2	5.2	7.0	8.9	8.3	8.6	9.0	8.8	8.8	8.1	7.8	7.9
26	7.9	5.5	6.6	8.9	8.4	8.7	8.8	8.6	8.7	8.2	7.8	8.0
27	10.4	5.3	7.4	8.8	8.4	8.5	8.6	8.4	8.5	8.4	8.0	8.2
28	10.4	5.8	7.7	8.7	8.1	8.3	8.5	8.3	8.4	8.4	7.8	8.0
29	10.0	6.0	7.6	8.7	8.3	8.4	8.8	8.5	8.6	8.2	7.8	8.0
30	10.1	6.2	7.7	8.3	8.0	8.1	8.8	8.4	8.6	8.4	7.9	8.1
31	---	---	---	8.1	7.8	7.9	8.4	7.8	8.1	---	---	---
Month	10.4	4.3	6.3	9.9	6.3	8.0	9.4	7.8	8.7	9.1	7.5	8.4