WASHINGTON STATE DEPARTMENT OF ECOLOGY

Data Summary: Lower Nooksack River Basin Bacteria Total Maximum Daily Load

Abstract

These figures and tables are the data summary for Publication No. 00-03-006, *Lower Nooksack River Basin Bacteria Total Maximum Daily Load,* distributed in January 2000.

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by Joe Joy
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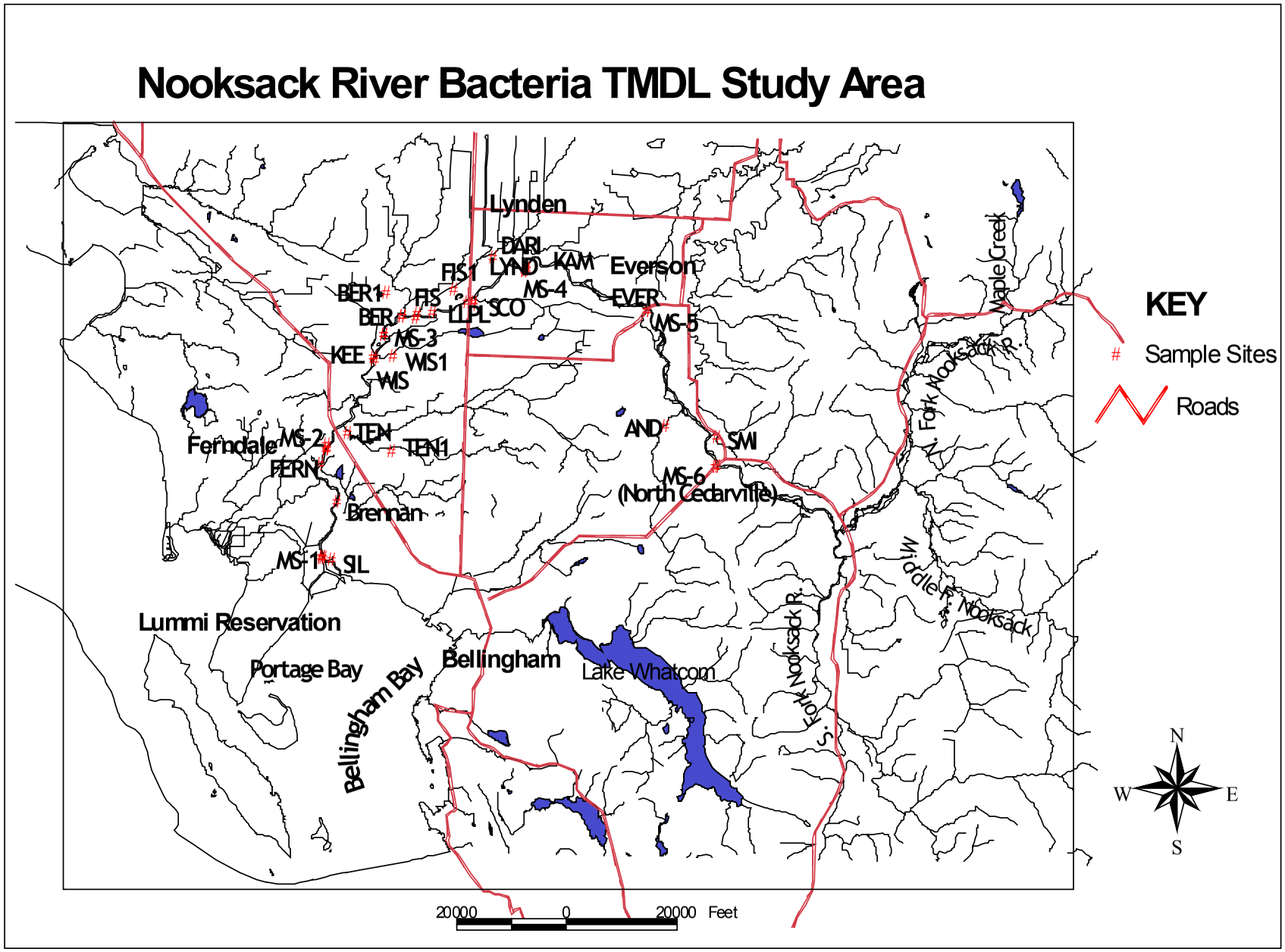

Figure 1. The Nooksack River bacteria total maximum daily load (TMDL) study area with Washington Dept. of Ecology water quality sites monitored from March 1997 to February 1998.

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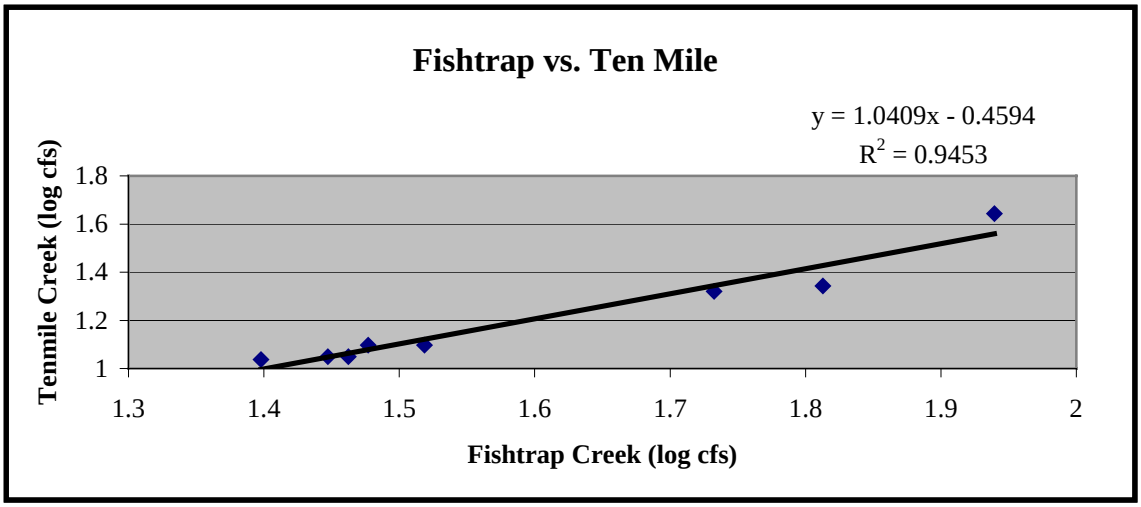
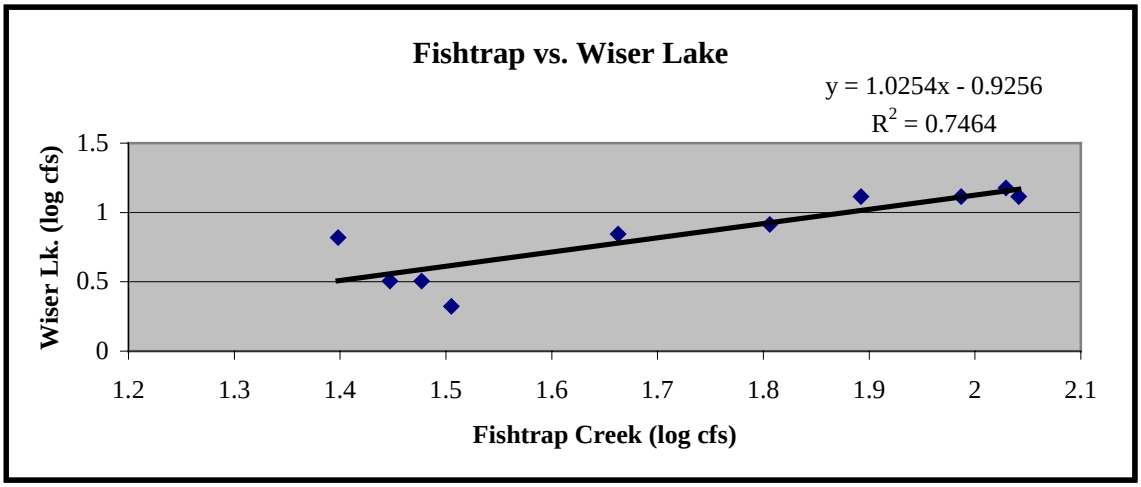
Figure 2 p.1. **Regressions of instantaneous flow data collected at various tributaries to continuous gaging data at Fishtrap Creek. Kamm Creek data collected by Western Washington University is also assessed.**





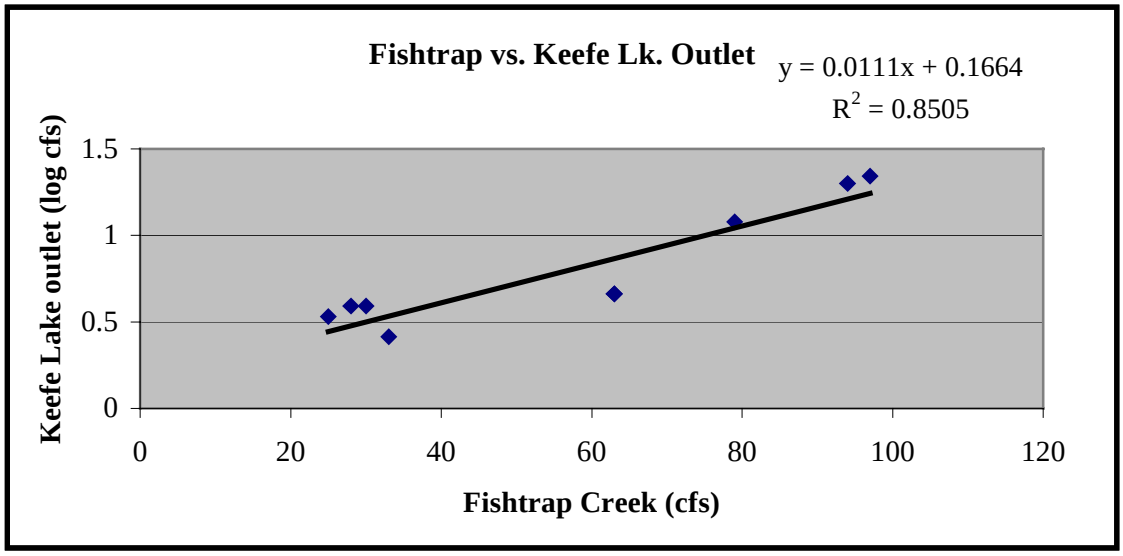
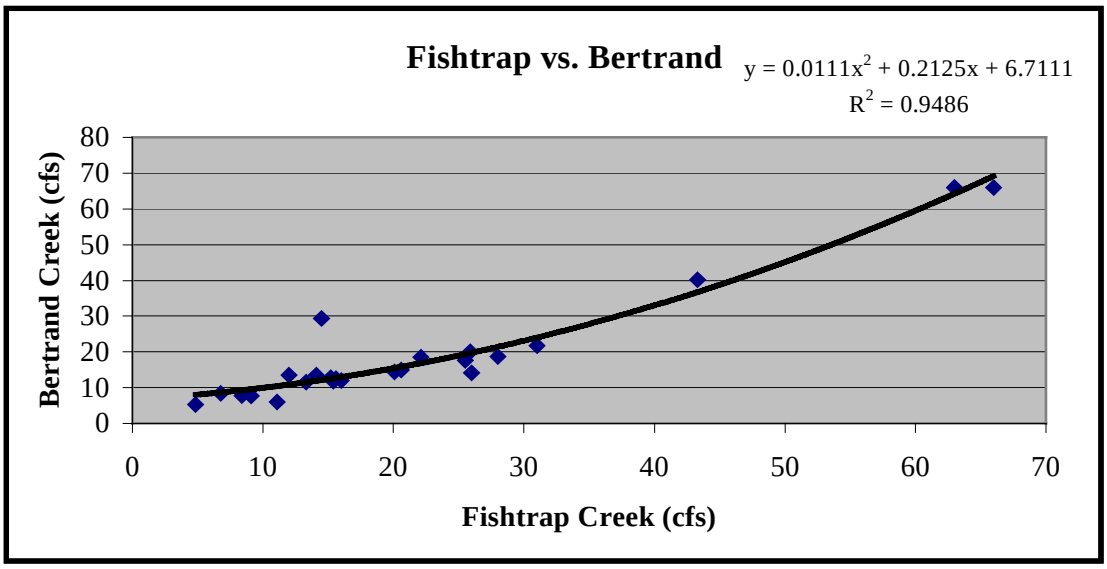
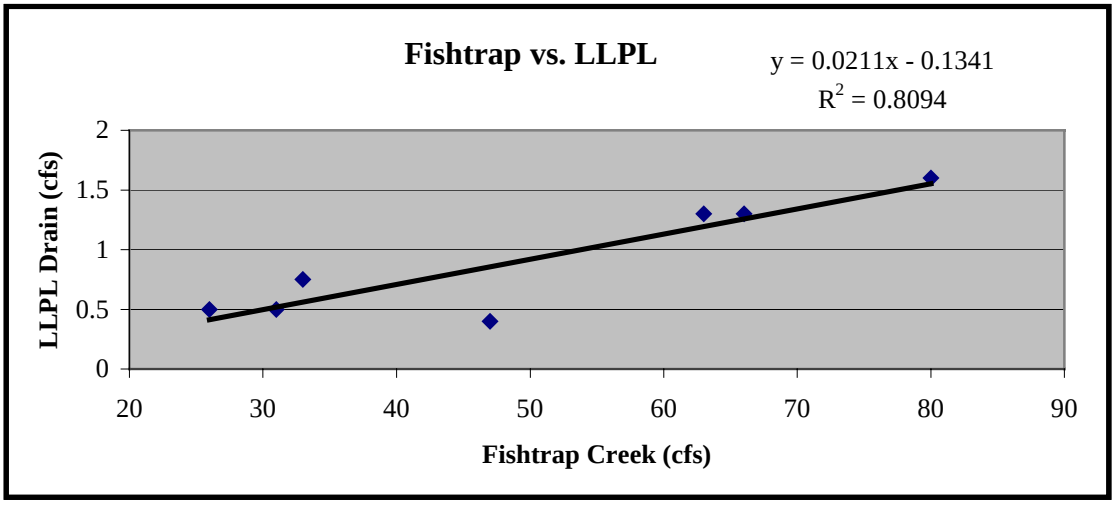


Figure 2 p.2. **Regressions of instantaneous flow data collected at various tributaries to continuous gaging data at Fishtrap Creek. Kamm Creek data collected by Western Washington University is also assessed.**





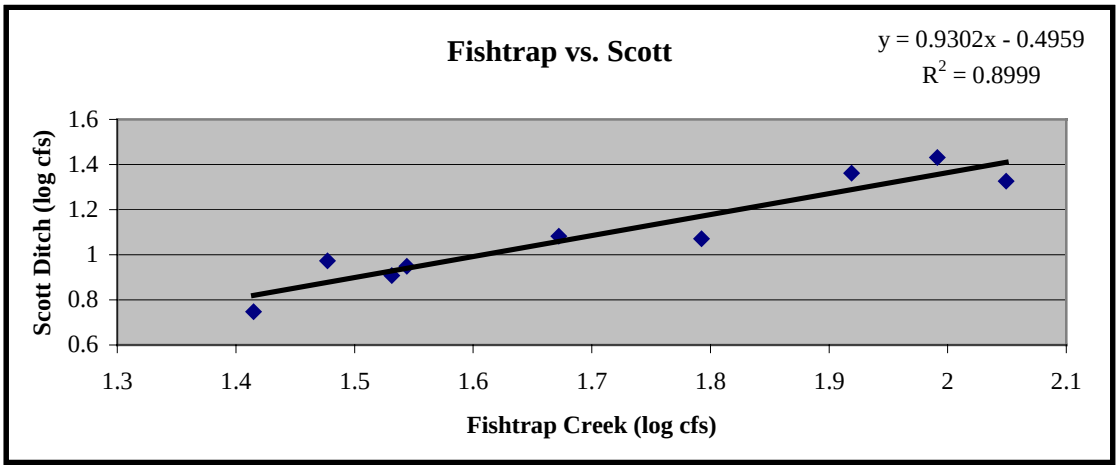
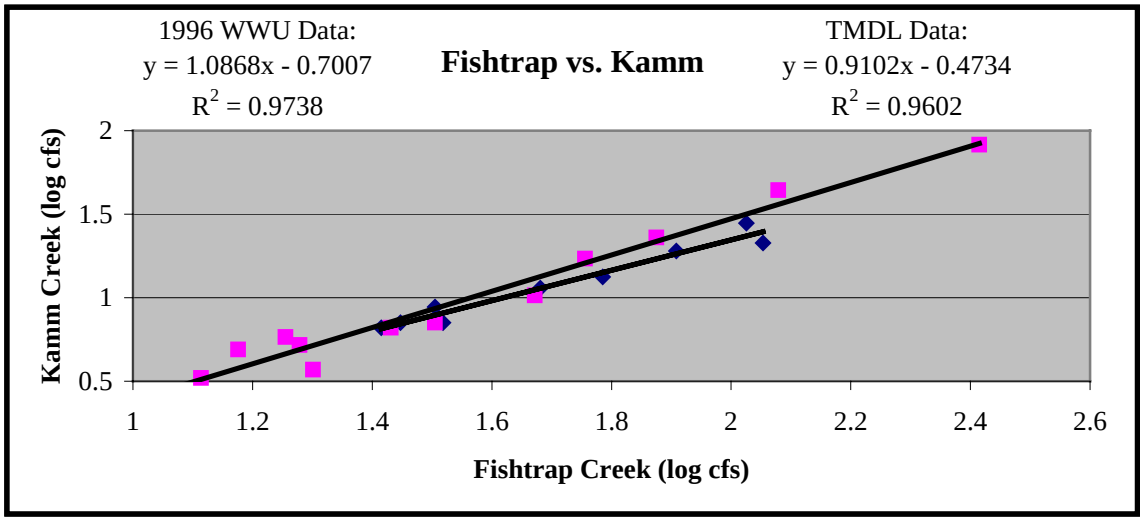
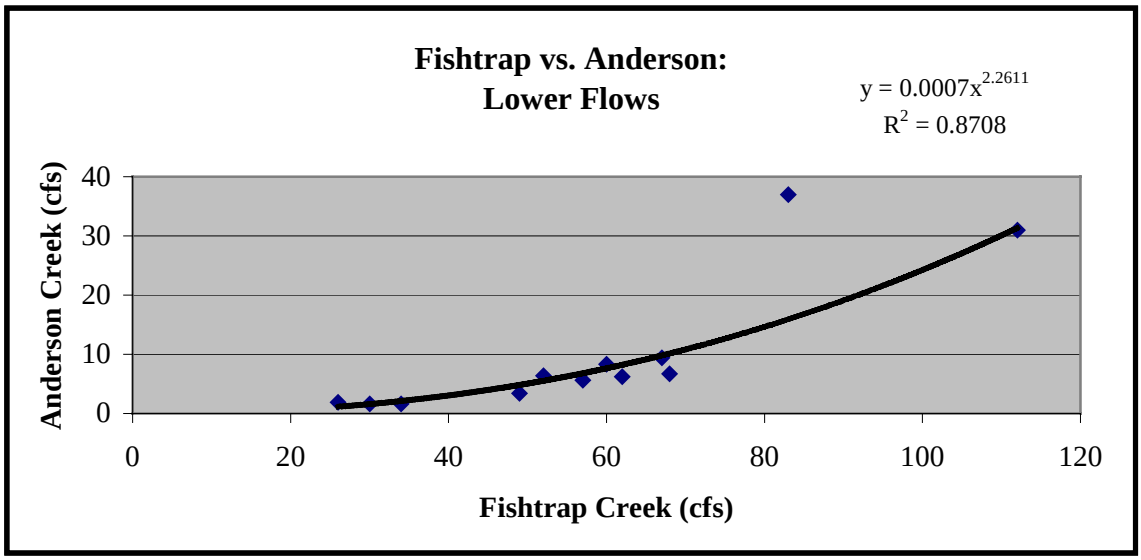


Figure 2 p.3. **Regressions of instantaneous flow data collected at various tributaries to continuous gaging data at Fishtrap Creek. Kamm Creek data collected by Western Washington University is also assessed.**





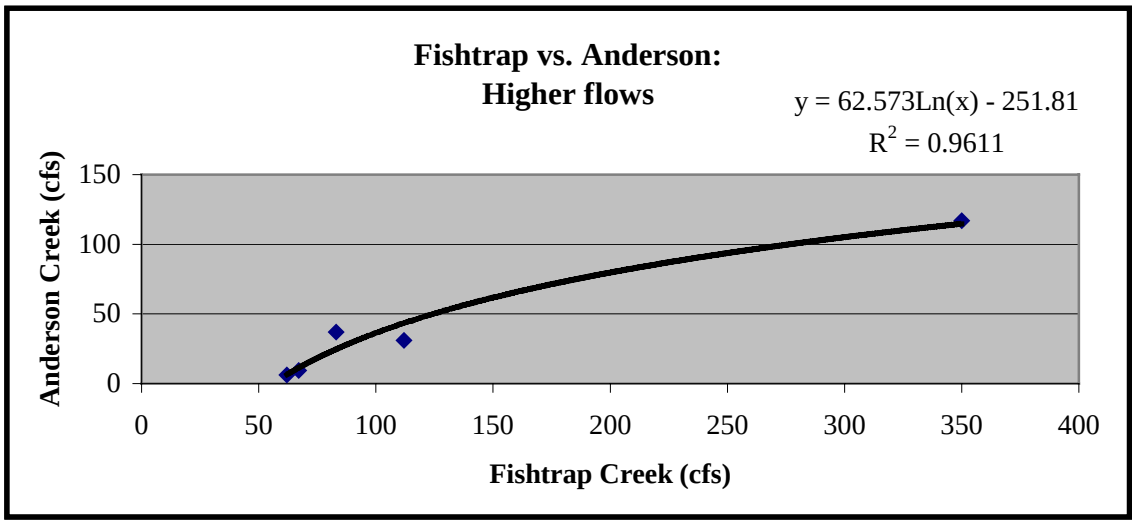
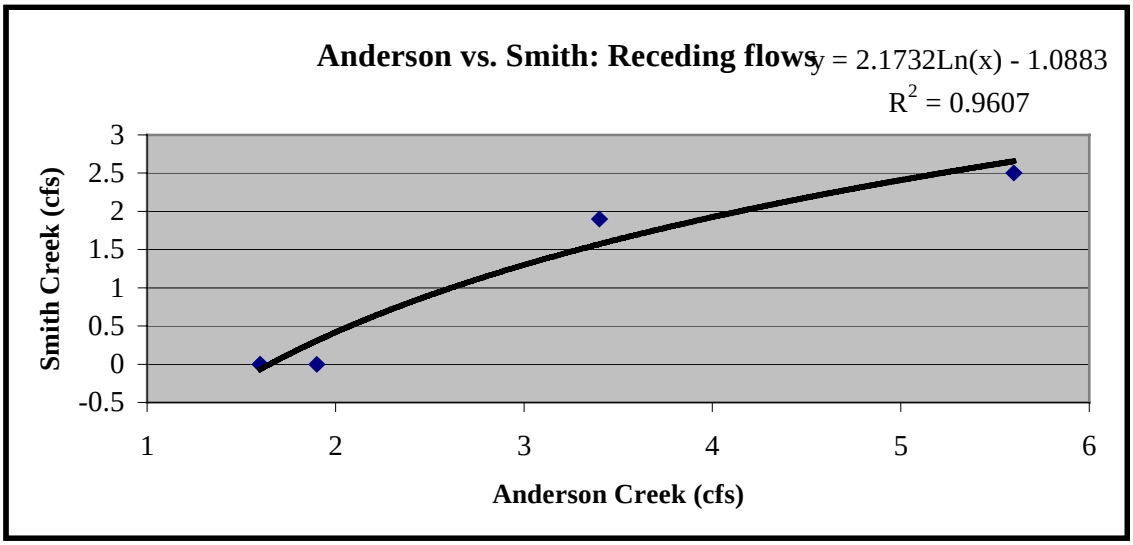


Figure 2 p.4. **Regressions of instantaneous flow data collected at various tributaries to continuous gaging data at Fishtrap Creek. Kamm Creek data collected by Western Washington University is also assessed.**



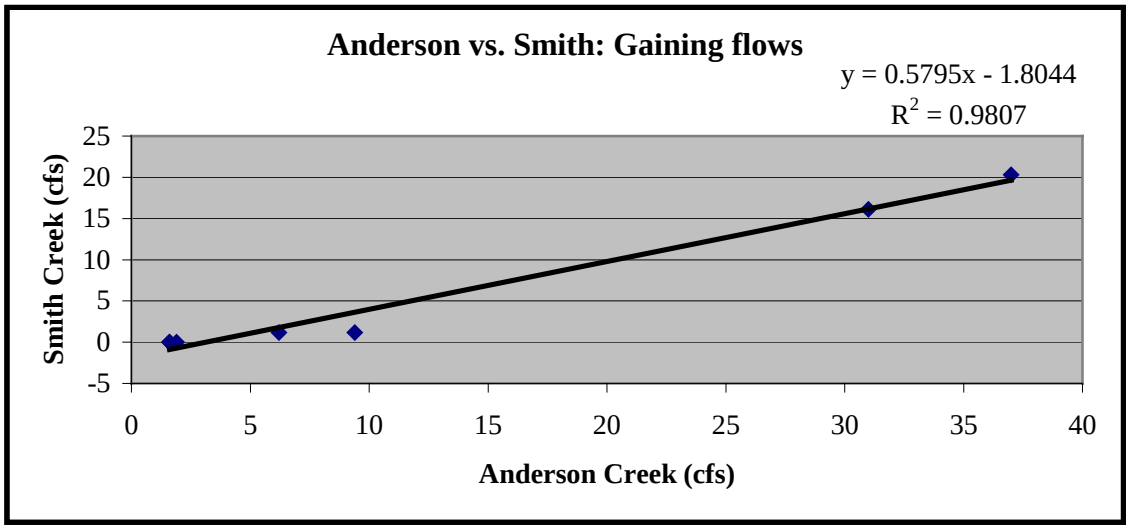


Table 1. Descriptions of water quality monitoring sites used during the 1997-98 lower Nooksack River basin bacteria TMDL study.

Abbreviation	Station Name	Description	Digital Mapping Coordinates*	
SIL	Silver Creek at Marine Drive	Center span of bridge crossing at Marine Drive	48.790816	122.581556
MS1	Marine Drive Bridge: Center	Center of river channel	48.791520	122.588481
MS1-R	Marine Drive Bridge: Right Channel	West side of channel approx. 1/3 distance from bank	48.791545	122.58900
MS1-L	Marine Drive Bridge: Left Channel	East side of channel approx. 1/3 distance from bank	48.791476	122.58799
FERN	Ferndale WWTP after dechlorination	Effluent from weir after dechlorination at end of contact chamber	48.837948	122.59196
MS2	Ferndale at Main Street Bridge: Center Channel		48.845464	122.586951
MS2-R	Ferndale at Main Street Bridge: Right Channel	Northwest side of channel approx. 1/3 distance from bank	48.845544	122.587086
MS2-L	Ferndale at Main Street Bridge: Left Channel	Southeast side of channel approx. 1/3 distance from bank	48.845391	122.586823
TEN	Tenmile Creek at Mouth	Boat access or using dirt road on south bank through adjacent field	48.856000	122.575563
TEN1	Tenmile Creek at Paradise Rd.	Used during all except one storm event	48.853551	122.572124
TEN2	Tenmile Creek at Northwest Road	Used during a single storm event sample only	48.854231	122.539543
WIS	Wiser Lake Creek at Mouth	Boat access from Nooksack River	48.890738	122.552732
WIS1	Wiser Lake Creek at Northwest Rd.	(Sampled only during March 1997 survey)	48.892714	122.539014
KEE	Keefe Lake Creek at Mouth	Boat access from Nooksack River	48.892451	122.553873
MS-3	Below Bertrand/Fishtrap at Mid-channel	Boat access only at mid-channel near right bank pilings: river mile 11.5	48.903059	122.546625
MS-3R	Below Bertrand/Fishtrap: right channel		48.903036	122.547037
MS-3L	Below Bertrand/Fishtrap:left channel		48.903076	122.546325
BER	Bertrand Creek at Mouth	Boat access from Nooksack River	48.912547	122.533144
FIS	Fishtrap Creek at Mouth	Boat access from Nooksack River	48.912101	122.521742
FIS1	Fishtrap Creek at River Road	Used during all except one storm event	48.914159	122.519529
FIS2	Fishtrap Creek at Flynn Road	USGS gaging station at Flynn Rd. bridge	48.926649	122.495013
LLPL	Drain left bank- below Meridian Rd. bridge	Boat access from Nooksack River	48.914682	122.494160
SCO	Scott Ditch at Mouth	Boat access from Nooksack River	48.920969	122.479141
SCO1	Scott Ditch at Bylsma Rd.	(Sampled only during March 1997 survey)	48.919305	122.462663
DARI	Darigold Condensate from Access Port	Manhole located through hedge in field adjacent to Apts.	48.942966	122.448222
LYND	Lynden WWTP after chlorination	Effluent from weir at end of contact chamber	48.938461	122.451031
MS4	Lynden at Hannegan Bridge: Center Channel		48.937108	122.440698
MS4-R	Lynden at Hannegan Bridge: Right Channel	Northwest side of channel approx. 1/3 distance from bank	48.937262	122.440786
MS4-L	Lynden at Hannegan Bridge: Left Channel	Southeast side of channel approx. 1/3 distance from bank	48.936954	122.440622
KAM	Kamm Creek at Mouth	Boat access from Nooksack River	48.938480	122.439584
KAM1	Kamm Creek at Hampton Rd.	(Sampled only during March 1997 survey)	48.945445	122.440402
EVER	Everson WWTP after chlorination	Effluent from weir at end of contact chamber	48.920002	122.348857
MS-5	Everson at Hwy. 544 Bridge	Center of riverchannel	48.918414	122.348201
MS-5R	Everson at Hwy. 544 Bridge: Right channel		48.918571	122.347975
MS-5L	Everson at Hwy. 544 Bridge: left channel		48.918237	122.348468
AND	Anderson Creek at Martin Road	Approx. 50' downstream of bridge	48.861722	122.330495
SMI	Smith Creek at Lind Road	Approx. 50' downstream of bridge	48.855998	122.292710
MS-6	North Cedarville at Hwy. 542 Bridge	Center of riverchannel	48.841801	122.292406
MS-6R	North Cedarville at Hwy. 542 Br.: Right channel		48.841894	122.292156
MS-6L	North Cedarville at Hwy. 542 Br.: Left channel		48.841708	122.292669

Miscellaneous drains, drainages, and main stem sites sampled once or twice during the 1997-98 surveys

Abbreviation	Station Name	Description	Latitude	Longitude	RM
CUL	Culvert at Ferndale	50' below structure (water intake?) on right bank, RM 5.3	48.83884	122.59025	5.3
ABFER	Storm drain above Ferndale Bridge (aka FEDR)	Right bank storm drain above Vanderyacht Park, RM 6.4	48.85068	122.58419	6.4
I5BR	Drainage channel at I-5 Bridge.	RB natural channel upstream side of bridge	48.85416	122.58172	6.6
SEV	Drainage above Tenmile Creek	Drainage channel on right bank, approximately RM 7.5	48.86079	122.56885	7.5
ABKAS	Left bank drainage above Kass Rd. farm (aka D7.8)	Left bank drainage channel at RM 7.9	48.86666	122.56440	7.9
DBPL	Drainage below farm with cows	Left bank drainage channel at approximately RM 8.5	48.87177	122.55671	8.5
BFAR	Drainage below farm	Left bank drain channel at RM 8.8	48.87177	122.55671	8.8
PUDMS	Mainstem at PUD intake	Center channel upstream side of PUD intake at RM 9.3	48.87980	122.56238	9.3
RBAK	Right bank drainage above power lines	Right bank drainage approximately RM 9.7	48.88358	122.55775	9.7
LELE	Left bank drainage below MS-3	Left bank drainage at approximately RM 11.1	48.89975	122.54261	11.1
MS-3.5	Mainstem at Meridian Road Bridge	Center channel downstream side of bridge at RM 15.2	48.92020	122.48417	15.2
D17	Drainage from Lynden area	Right bank drainage approximately RM 16.8	48.92992	122.46250	16.8
D17.5	Drainage near Lynden WWTP	Right bank near Lynden WWTP, could be filtration plant return	48.93755	122.45467	17.5
FISCUL	Culvert above Fishtrap Creek Gage	Left bank pipe 15 feet above Flynn Road at Fishtrap Creek	48.92675	122.49482	
MCK	Drain into Tenmile Creek	Approximately 40 feet upstream from mouth on right bank	48.85560	122.57515	

* Mapping coordinates reference: NAD 1927

Table 2 p. 1. **Water quality data collected from the main stem Nooksack River at Marine Drive (MS-1).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL
3/17/97	C	11:28	6	109		11.7	110	84			0.745	0.045	0.07	0.01	3.64	25	170	70
4/28/97	R	16:10	8.0	79		11.6	29	29									33	23
	C	16:15								0.355	0.338	0.02	0.065	0.007	1.9	50		
	L	16:12					14	14									79	33
4/30/97	R	15:50					24	22	9								70	31
	C	15:52	7.8	72		11.3				0.433	0.382	0.01	0.058	0.005	2.11	33		
	L	15:55					28	23	17								130	130
5/12/97	R	16:05					400	340		0.273	0.171	0.03	0.132				79	79
	C	16:15	11.6							0.293	0.158	0.027	0.133	0.005	1.29	100		
	L	16:10					390	350		0.258	0.129	0.027	0.145				170	170
5/13/97	R	16:20					57	55	18									
	C		10.6	50	6.94	10				0.248	0.161	0.033	0.138	0.005	1.11	120		
	L						77	75	26									
5/14/97	R	18:25					45	45	15								33	23
	C	18:35	10.8	48	7.22	10.1				0.272	0.166	0.03	0.109	0.005	1.08	140		
	L	18:30					45	45	16								46	33
6/16/97	R	16:20					52	47							1.13		79	49
	C	16:25	12.7	68	7.36	10.7				0.189	0.174	0.01	0.051	0.005	1.16	95		
	L	16:30					51	45							1.18		140	70
6/18/97	R	13:33					140	140	32								180	180
	C	13:35	10.7	59	7.65	11.4				0.119	0.076	0.01	0.031	0.005				
	L	13:37					250	250	40								240	240
7/23/97	R	10:35					21	18							1.77	40	23	13
	C	10:40	14.5	90		10.0				0.264	0.212	0.01	0.064	0.005	1.77	40		
	L	10:45					32	32							1.76	38	110	110
8/26/97	R	8:20					63	57		0.237	0.212	0.01	0.055	0.005	2.14		79	79
	C	8:30	13.7	102	6.6	10.0												
	L	8:25					43	43		0.25	0.209	0.01	0.044	0.005	2.15		23	23
8/26/97	C	15:30	13.5	100			480	450	180	0.224	0.184	0.01	0.058	0.005	2.16		490	490
8/27/97	R	18:40					180	180	190	0.275	0.216	0.01	0.073	0.009	1.83		310	310
	C	18:50	14			10.2												
	L	18:45					260	260	210	0.325	0.282	0.01	0.07	0.007	1.92		490	490
9/22/97	R	16:11					48	44		0.364	0.337	0.01	0.06				130	130
	C	16:16	15.4	120	7.7									0.005	2.58	17		
	L	16:21					35	35		0.381	0.341	0.01	0.062				130	79
9/23/97	R	16:00					54	51	37								49	49
	C	16:05	16	97	7.56	9.9				0.386	0.328	0.01	0.058		2.56	14		
	L	16:10					49	49	37								49	49
9/24/97	R	16:35					53	49									33	33
	C	16:40	15.6	125	7.47	9.7				0.363	0.326	0.01	0.082		2.7	17		
	L	16:45					45	45									33	33

* Channel area sampled: R = right, L = left, C = center.
Double underlined values below stated detection limit.
Single underline values are estimates.

Table 2 p. 2. **Water quality data collected from the main stem Nooksack River at Marine Drive (MS-1).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL
10/29/97	R	18:25					340	340									920	920
	C	18:35	9.1	83														
	L	18:30					410	410									1600	1600
10/30/97	R	0:45					400	370									350	350
	C	0:46	9.5	85														
	L	0:40					480	460									920	350
10/30/97	R	8:55					370	370			0.409	0.011	0.142				920	920
	C	9:00	9.2	82														
	L	9:05					380	380			0.387	0.015	0.136				280	280
10/30/97	R	15:20					900	900										
	C	15:30	9.5	59														
	L	15:25					1200	1200										
10/30/97	R	23:42					610	600										
	C	23:47	9.3	64														
	L	23:45					570	570										
10/31/97	R	8:50					230	230			0.444	0.01	0.094					
	C	9:00	8.9	78														
	L	8:55					280	280			0.449	0.01	0.147					
11/16/97	R	15:50					6	6	14		0.493	0.01	0.049		3.54	9	12	12
	C	16:00	5.5	140	6.92	12.1												
	L	15:55					6	6			0.476	0.01	0.05		3.52	9.3	33	33
11/17/97	R	16:15					240	70			0.478	0.01	0.041		3.64	9.2		
	C	16:25	6.4															
	L	16:20					230	230			0.479	0.01	0.031		3.54	8.3		
11/18/97	R	16:05					80	80	280		0.474	0.01	0.058		3.02	26	49	33
	C	16:15	6.8	118	7.25													
	L	16:10					83	83			0.473	0.01	0.064		3.08	29	130	79
11/19/97	R	16:14					96	96			0.479	0.01	0.051		3.55	16		
	C	16:11	6.6	128	7.23	11.8												
	L	16:09					69	69			0.469	0.01	0.049		3.55	14		
12/15/97	R	9:00					31	23									23	23
	C	9:03	6	140	6.83													
	L	9:05					31	31									49	49
	R	15:15					34	34									46	46
	C	15:17	5.5	140	6.58													
	L	15:20					49	49									140	140
12/16/97	R	0:00					29	29			0.668	0.011	0.03					
	C	0:03	5.8	135	6.55													
	L	0:05					31	26			0.685	0.014	0.028					
	R	10:10					21	21										
	C	10:12	6.5	140	6.73													
	L	10:15					30	30										
	R	15:50					47	47			0.734	0.023	0.049					
	C	15:53	7	135	6.67													
	L	15:55					47	47			0.744	0.019	0.041					

* Channel area sampled: R = right, L = left, C = center.
Double underlined values below stated detection limit.
Single underline values are estimates.

Table 2 p. 3. **Water quality data collected from the main stem Nooksack River at Marine Drive (MS-1).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL
	R	22:45					410	410										
	C	22:47	6.5	90	6.63													
	L	22:50					390	390										
1/27/98	R	16:25					40	40										
	C	16:27	6.1	95														
	L	16:30					46	46										
	R	22:45					39	39									110	110
	C	22:47	5.8	98														
	L	22:50					44	44									33	33
1/28/98	R	9:01					35	35										
	C	9:05	6.1	101														
	L	9:03					28	28										
	R	14:10					36	36										
	C	14:15	6.2	102														
	L	14:12					28	28										
	R	22:20					49	49			0.711	0.026	0.072				49	33
	C	22:23	6.3	105														
	L	22:25					52	52			0.71	0.025	0.077				70	70
1/29/98	R	9:10					67	65			0.683	0.025	0.084					
	C	9:12	6.7	107														
	L	9:15					56	56			0.68	0.029	0.088					
2/23/98	R	14:25					7	7	17	0.653	0.596	0.013	0.051		2.78	16	11	4.5
	C	14:27	6.6	85	6.9	12												
	L	14:30					10	9		0.659	0.577	0.012	0.051		2.75	15	13	7.8
2/24/98	R	15:50					13	13		0.707	0.658	0.011	0.054		3.02	11		
	C	15:52																
	L	15:55					14	14										
2/25/98	R	15:30					52	51	19	0.758	0.677	0.021	0.034		3.24	9.2	110	110
	C	15:32	6	110	6.86													
	L	15:35					51	51									130	130
2/26/98	R	16:45					44	44		0.776	0.692	0.015	0.039		3.39	9.9		
	C	16:47	5.5	113	6.75	11.1												
	L	16:50					30	30		0.78	0.682	0.017	0.038					

* Channel area sampled: R = right, L = left, C = center.
Double underlined values below stated detection limit.
Single underline values are estimates.

Table 3 p.1. Water quality data collected from the main stem Nooksack River at Ferndale (MS-2).

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	Flow[1] cfs	Flow[2] cfs	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL
3/17/97	L**	14:05	5.9	111		11.6	4090	4080	190	140			0.788	0.045	0.078	0.01	3.59	28	490	490
3/18/97	C	16:00	7.1	95.3		11.6	6040	6030	710	150			0.603	0.052	0.108	0.01	2.74	50		
4/28/97	R	15:30							31	31									33	13
	C	15:35	8.2	79		11.6	6140	5960				0.39	0.353	0.02	0.078		1.82	55		
	L	15:32							49	43									33	17
4/30/97	R	14:50							11	10	23								23	23
	C	15:00	8.0	87		11.4	5070	5000				0.417	0.379	0.018	0.068	0.005	2.15	27		
	L	14:55							9	9	10								17	17
5/12/97	R	15:05							230	220	12	0.219	0.124	0.031	0.192				220	70
	C	15:15	10.27	53.4	7.37	11.0	7240	7580				0.216	0.128	0.029	0.215	0.005	1.2	100		
	L	15:10							240	230	9	0.244	0.158	0.018	0.193				46	33
5/14/97	R	16:35							49	49	13								110	33
	C	16:45	11.6	48	7.26	11.7	9000	9300				0.255	0.115	0.024	0.124	0.005	1.11	140		
	L	16:40							58	53	27								49	33
6/18/97	R	11:28							200	200	120								240	130
	C	11:30	9.75	47.9	7.26	11.07	8490	8760				0.124	0.081	0.01	0.066	0.005	0.834	230		
	L	11:32							150	150	100								350	350
7/21/97							4680													
7/22/97	C	15:02	13.6	72.5	7.35	9.76	4200	4170				0.246	0.133	0.01	0.069	0.005	1.44	50		
8/4/97	R	16:25							51	51		0.182	0.15	0.01	0.046				49	49
	C	16:35	16.3	81.6	7.69	10.45	2790	3640								0.005	1.49	27		
	L	16:30							20	20		0.207	0.165	0.01	0.055				49	49
8/25/97	R	16:45							28	28		0.197	0.213	0.01	0.047	0.005	1.67		79	49
	C	16:55	14.4	92.6	7.5	11.1	2050	2070												
	L	16:50							32	29		0.227	0.209	0.01	0.054	0.005	2.08		17	17
8/26/97	R	14:30							520	490	210	0.206	0.191	0.01	0.048	0.005	1.65		1300	1300
	C	14:45	12.7	88	7.95	10.8	2110	2130												
	L	14:40							510	460	250	0.205	0.198	0.01	0.046	0.005	1.92		1700	1700
8/27/97	R	17:25							170	160	130	0.241	0.224	0.01	0.082	0.005	1.41		460	460
	C	17:35	13.55	80.2	7.3	10.9	2410	2490												
	L	17:30							210	210	160	0.27	0.231	0.01	0.075	0.005	1.74		790	790
9/21/97	R	16:10							27	23	49	0.398	0.34	0.01	0.062	0.009				
	C	16:20					2460	2410												
	L	16:15							45	41	43	0.399	0.346	0.01	0.073	0.008				
9/22/97	R	15:20							44	39		0.38	0.334	0.01	0.062				110	110
	C	15:25	13.5	97	7.3	9.03	2260	2260								0.006	2.37	14		
	L	15:30							29	29		0.373	0.35	0.01	0.059				130	130
9/23/97	R								28	24	51								130	14
	C	15:05	13.89	97.4	7.32	9.45	2150	2150				0.378	0.323	0.01	0.055		2.46	13		
	L								17	14	31								79	33
9/24/97	R								25	23									49	49
	C	15:25	14.1	98	7.32	9.4	2070	2070				0.394	0.349	0.01	0.061		2.48	14		
	L								20	19									46	46
10/29/97	R	18:05							330	330										
	C	18:07	9	85			4710	7085												
	L	18:10							460	440										
10/30/97	R	0:22:00							470	470									350	350
	C	0:20:00	9.2	80			11200	6630												
	L	0:18:00							310	310									540	350
10/30/97	R	8:35							210	210			0.385	0.01	0.127				240	240
	C	8:45	9.3	83			11200	6540												
	L	8:40							310	310			0.374	0.01	0.136				920	920
10/30/97	R	15:10							440	440										
	C	15:20	9.4	58			11200	16600												
	L	15:15							420	420										
10/30/97	R	23:25							290	290										
	C	23:35	9	65			11200	13500												
	L	23:30							590	590										

* Channel area sampled: R = right, L = left, C = center.

[1] Instantaneous flow at time of sampling at USGS Station 122113100 at Ferndale.

Double underlined values are below stated detection limit.

Table 3 p.2. Water quality data collected from the main stem Nooksack River at Ferndale (MS-2).

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	Flow[1] cfs	Flow[2] cfs	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL
** Taken at left bank boat launch, downstream at river mile 5.7.							[2] Mean daily flow at USGS Station 122113100 at Ferndale.							Single underline values are estimates						
10/31/97	R	8:25							310	310			0.436	0.01	0.122					
	C	8:35	8.6	79			11200	10450												
	L	8:30							250	250			0.463	0.017	0.083					
11/16/97	R	15:10							3	3	22		0.485	0.01	0.051		3.05	8	23	23
	C	15:20	4.8	110	7.44	12.1	1850	1840												
	L	15:15							14	14			0.483	0.01	0.05		3.48	9	27	27
11/17/97	R	15:40							43	40			0.502	0.01	0.058		3.4	8.3		
	C	15:50	5.9	110	7.26	11.7	1880	1880												
	L	15:45							60	60			0.504	0.01	0.049		3.59	8		
11/18/97	R	15:00							71	71	270		0.46	0.014	0.089		2.91	23	31	31
	C	15:10	6.5	97	7.31	11.8	2410	2570												
	L	15:05							110	110			0.479	0.013	0.057		3.06	23	170	170
11/19/97	R	15:10							40	40			0.474	0.01	0.047		3.55	12		
	C	15:15	5.84	101.8	7.29	12.01	2150	2080												
	L	15:05							41	41			0.47	0.01	0.048		3.12	12		
12/15/97	R	8:35							20	20									23	23
	C	8:45	5.8	140	6.74		1760	1810												
	L	8:40							29	20									64	64
	R	15:00							37	37									23	23
	C	15:10	5.5	140	6.64		1760	1810												
	L	15:05							37	34									110	110
	R	23:40							17	17			0.688	0.01	0.025					
	C	23:50	6	125	6.46		1760	1740												
	L	23:45							23	23			0.697	0.01	0.025					
12/16/97	R	9:30							36	36										
	C	9:40	6.8	140	6.75		3580	2000												
	L	9:35							32	32										
	R	15:35							550	550			0.776	0.025	0.074					
	C	15:45	7.1	140	6.61		3580	2560												
	L	15:40							550	550			0.817	0.033	0.073					
	R	22:25							460	460										
	C	22:35	6.5	78	6.65		3580	9870												
	L	22:30							340	340										
1/27/98	R	16:10							40	40										
	C	16:20	6.3	95			6960	6720												
	L	16:15							43	43										
	R	22:20							44	44									79	79
	C	22:30	5.9	100			6960	6380												
	L	22:25							53	53									110	26
1/28/98	R	8:43							43	43										
	C	8:47	5.5	105			5840	5890												
	L	8:45							35	35										
	R	13:50							47	47										
	C	13:55	6.1	105			5840	5720												
	L	13:52							43	43										
	R	21:58							61	61			0.698	0.025	0.096				110	110
	C	21:55	6.4	105			5840	5660												
	L	22:00							43	43			0.729	0.027	0.092				33	33
1/29/98	R	8:50							92	92			0.666	0.021	0.072					
	C	9:00	6.4	105			5620	5670												
	L	8:55							63	61			0.666	0.032	0.086					
2/23/98	R	13:20							10	10	9	0.665	0.586	0.01	0.06		2.45	16	6.8	6.8
	C	13:30	5.61	91.1	7.37	12.24	3080	3050												
	L	13:25							7	7		0.678	0.613	0.01	0.058		2.87	16	11	7.8
2/24/98	C	15:10	4.93	98	7.34	12.6	2780	2730	17	14		0.722	0.654	0.01	0.043		3.04	11		
2/25/98	C	14:20	5.09	101.7	7.24	12.24	2630	2610	61	61		0.777	0.691	0.01	0.033		3.11	9.1	110	110
2/26/98	C	15:15	2:24	102	7.38	12.4	2630	2620	35	35		0.759	0.681	0.01	0.043		3.32	9.8		

* Channel area sampled: R = right, L = left, C = center.
** Taken at left bank boat launch, downstream at river mile 5.7.
[1] Instantaneous flow at time of sampling at USGS Station 122113100 at Ferndale.
[2] Mean daily flow at USGS Station 122113100 at Ferndale.
Double underlined values are below stated detection limit.
Single underline values are estimates

Table 4. Water quality data collected from the main stem Nooksack River at Bertrand Creek (MS-3).

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
3/17/97	L**	15:20	5.8	92.3		12	100				0.471	0.02	0.059	0.01	1.71	29
4/28/97	R	12:29					26	23	56							
	C	12:35	7.6	75	7.26	11.7				0.335	0.316	0.011	0.113	0.006	1.43	50
	L	12:31					31	31								
4/30/97	R	10:55					49	41								
	C	10:59	7.2	68		11.4				0.381	0.358	0.014	0.06	0.006	1.57	27
	L	10:57					41	29								
5/12/97	R	14:15					170	140		0.24	0.147	0.034	0.177			
	C	14:25	10.1	52	7.4	11.3				0.239	0.157	0.031	0.18	0.005	1.05	90
	L	14:20					160	130		0.246	0.149	0.033	0.195			
6/18/97	R	10:33					230	220	100							
	C	10:35	9.41	46.7	7.29	11.15				0.119	0.087	0.01	0.108	0.005	0.745	260
	L	10:37					220	220	55							
7/21/97	C	15:55	13.2	65	7.63		28	28		0.209	0.168	0.01	0.089	0.005	1.1	80
7/22/97	C	12:50	12.81	68.5	7.21	10.12				0.224	0.142	0.01	0.083	0.005	1.18	50
7/23/97	C	14:10	13.2	77.4	7.63	9.93	13	13		0.329	0.266	0.01	0.089	0.005	1.32	34
8/4/97	R	15:20					25	25		0.167	0.144	0.01	0.053			
	C	15:30	15.9	78.2	7.68	10.6								0.009	1.25	31
	L	15:25					27	27		0.156	0.137	0.01	0.054			
8/25/97	R	16:15					14	14	99	0.192	0.199	0.01	0.042	0.005	1.38	
	C	16:25	13.7	88	7.8	11.2										
	L	16:20					17	17	6	0.262	0.203	0.01	0.044	0.005	1.46	
8/26/97	R	13:50					43	40	37	0.205	0.195	0.01	0.057	0.005	2.69	
	C	13:59	12.2	86	7.5	11.03										
	L	13:55					43	40	13	0.197	0.182	0.01	0.051	0.005	1.39	
8/27/97	R	16:00					120	120	110	0.244	0.209	0.01	0.098	0.005	1.18	
	C	16:10	13.1	75.7	7.3	11.9										
	L	16:05					120	120	130	0.225	0.201	0.01	0.104	0.005	1.22	
9/22/97	C	14:35	13.1	92	7.3	8.1	23	23		0.385	0.329	0.01	0.063	0.005	1.85	15
9/23/97	C	13:45	13	93	7.3	9.7	21	21	37	0.335	0.31	0.01	0.059		1.94	13
9/24/97	C	14:15	13.4	94	7.3	9.5	14	13		0.357	0.305	0.01	0.06		1.96	14
11/16/97	C	14:15	4.7	110	7.66	12.8	7	7	7		0.469	0.01	0.05		2.59	6
11/17/97	C	14:51	5.9	103	7.21	11.7	25	25			0.458	0.01	0.052		2.63	9.9
11/18/97	C	13:40	6.5	91	7.26	11.9	69	69	210		0.453	0.01	0.046		2.42	24
11/19/97	C	14:18	5.8	97.6	7.24	12.4	31	30			0.445	0.01	0.048		2.67	12
2/23/98	C	12:40	5.2	87	7.3	12.6	21	17	13	0.661	0.585	0.01	0.05		2.14	16
2/24/98	C	14:20	4.63	92.3	7.28	12.6	8	8		0.653	0.611	0.01	0.049		2.33	13
2/25/98	C	11:40	4.6	95	7.52	12.8	87	84	29	0.751	0.642	0.011	0.038		2.46	8.6
2/26/98	C	14:24	4.8	96.5	7.33	12.6	65	65		0.719	0.644	0.01	0.042		2.62	11

* Channel area sampled: R = right, L = left, C = center.
** Taken upstream from left bank near Ritter Rd at river mile 12.6.

Double underlined values below stated detection limit.
Single underline values are estimates.

Table 5 p. 1**. Water quality data collected from the main stem Nooksack River at Lynden (MS-4).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
3/18/97	C	12:25	7.1	73.3	6.8	11.95	22	13			0.334	0.011	0.115	0.01	1.09	55
4/30/97	R	9:40					5	5								
	C	9:44	7.2	72		11.5				0.242	0.236	0.018	0.063	0.005	1.15	25
	L	9:42					6	5								
5/12/97	R	13:00					13	12		0.129	0.074	0.019	0.191			
	C	13:10	9.3	45	7.5	11.6				0.124	0.066	0.022	0.132	0.005	0.763	75
	L	13:05					16	16		0.184	0.109	0.024	0.148			
5/13/97	R	15:00					20	19	15							
	C	15:10	10.8	46	6.66	11.4				0.176	0.116	0.033	0.124	0.005	0.743	
	L	15:05					17	16	22							
5/14/97	R	13:45					47	47	10						0.68	130
	C	13:55	10.2	44	6.53	11.5				0.167	0.069	0.032	0.202	0.005	0.696	130
	L	13:50					31	31	7						0.734	140
6/18/97	R	9:42					330	320	44						0.624	
	C	9:44	8.89	45.1	7.44	11.33				0.086	0.061	0.01	0.066	0.01	0.661	240
	L	9:46					140	140	29						0.618	
7/21/97	C	15:15	13.0	60	7.38	10.2	17	17		0.127	0.089	0.01	0.08	0.01	0.699	70
7/23/97	R	13:00					5	5		0.154	0.13	0.01	0.071		0.872	
	C	13:05	12.7	71.3	7.44	9.94				0.126	0.098	0.01	0.066	0.005	0.887	
	L	13:10					7	5		0.109	0.103	0.01	0.071		0.917	31
8/3/97	R	13:30					13	13		0.084	0.063	0.01	0.038			
	C	13:40	15.17	7.72	71.4	10.7								0.005	2.8	27
	L	13:35					10	10		0.067	0.055	0.01	0.043			
8/25/97	R	13:00					6	5		0.122	0.1	0.01	0.056	0.005	1.08	
	C	13:10	12.8	90	7.7	10.6										
	L	13:05					10	10		0.104	0.09	0.01	0.029	0.005	1.04	
8/26/97	R	12:35					16	16	16	0.651	0.636	0.01	0.037	0.005	1.36	
	C	12:45	11.8	79	7.6	11.04										
	L	12:40					12	12	11	0.085	0.089	0.01	0.042	0.005	0.99	
8/27/97	R	14:20					71	67	71	0.126	0.097	0.01	0.096	0.005	0.979	
	C	14:30	13.1	70.1	7.4	11.0										
	L	14:25					93	91	85	0.119	0.104	0.01	0.097	0.005	0.842	
9/22/97	R	12:50					15	15		0.622	0.605	0.01	0.045			
	C	12:55	12.2	85	7.3	10.1								0.005	1.19	13
	L	13:00					10	9		0.236	0.205		0.053			
9/23/97	R	13:05					180	180	110							
	C	13:10	12.5	85	7.36	10.17				0.227	0.195	0.01	0.055		1.21	13

* Channel area sampled: R = right, L = left, C = center.
Double underlined values are below stated detection limit.
Single underline values are estimates.

Table 5 p. 2**. Water quality data collected from the main stem Nooksack River at Lynden (MS-4).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
	L	13:15					8	8	23							
9/24/97	R	13:00					22	20								
	C	13:05	12.7	86	7.39	9.8				0.216	0.19	0.01	0.063		1.24	12
	L	13:10					8	8								
10/29/97	R	16:45					170	150								
	C	16:55	8.5	65												
	L	16:50					110	96								
10/29/97	R	23:05					63	57								
	C	23:15	8.5	60												
	L	23:10					46	46								
10/30/97	R	7:15					100	100			0.247	0.01	0.17			
	C	7:25	8.9	67												
	L	7:20					34	34			0.23	0.01	0.156			
10/30/97	R	13:40					250	250								
	C	13:50	9	55												
	L	13:45					290	290								
10/30/97	R	22:15					170	170								
	C	22:25	9	60												
	L	22:20					140	140								
10/31/97	R	7:05					63	63			0.331	0.01	0.134			
	C	7:05	8.3	66												
	L	7:05					92	92			0.341	0.01	0.144			
11/16/97	R	11:40					3		5		0.281	0.01	0.026		1.67	6
	C	11:50	5	115	6.89	12.2										
	L	11:45					3				0.28	0.01	0.052		1.64	8.4
11/17/97	R	13:45					6	6			0.306	0.01	0.043		1.7	9.7
	C	13:55	5.9	91	7.1	11.9										
	L	13:50					6	6			0.263	0.01	0.038		1.61	9.7
11/18/97	R	9:00					79	74	290		0.261	0.01	0.037		1.57	24
	C	9:10	6.2	100	7.36											
	L	9:05					55	55			0.269	0.011	0.042		1.56	24
11/19/97	R						8	8			0.285	0.01	0.04		1.71	9
	C	13:10	5.7	86.9	7.01	11.9										
	L						9	8			0.286	0.01	0.03		1.72	9.2
12/15/97	R	7:20					3	3								
	C	7:30	5.6	112	6.52											
	L	7:25					3									
	R	13:40					3	3								
	C	13:50	5.5	110	6.55											
	L	13:45					3	3								
	R	22:20					6	6			0.357	0.01	0.05			

* Channel area sampled: R = right, L = left, C = center.
Double underlined values are below stated detection limit.
Single underline values are estimates.

Table 5 p. 3**. Water quality data collected from the main stem Nooksack River at Lynden (MS-4).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
	C	22:30	5.7	110	6.65											
	L	22:25					6	6			0.305	0.01	0.044			
12/16/97	R	8:20					3	3								
	C	8:30	6.4	115	6.65											
	L	8:25					9	9								
	R	14:15					29	29			0.329	0.01	0.078			
	C	14:25	7	105	6.6											
	L	14:20					21	21			0.3	0.01	0.056			
	R	21:15					120	120								
	C	21:25	5.9	60	6.51											
	L	21:20					150	150								
1/27/98	R	14:50					10	10								
	C	15:00	6.2	79												
	L	14:55					4	4								
	R	21:05					2	2								
	C	21:15	5.9	81												
	L	21:10					1									
1/28/98	R	7:16					1									
	C	7:20	5.4	85												
	L	7:18					6	6								
	R	12:35					5	5								
	C	12:39	5.5	85												
	L	12:37					3	3								
	R	20:30					22	22			0.354	0.01	0.083			
	C	20:40	6.2	83												
	L	20:35					11	11			0.369	0.01	0.08			
1/29/98	R	7:25					28	28			0.353	0.01	0.05			
	C	7:35	6.1	85												
	L	7:30					12	12			0.33	0.01	0.053			
2/23/98	R	10:00					4	3	13	0.381	0.357	0.01	0.049		1.34	16
	C	10:10	5.0	140	6.89	12.3										
	L	10:05					8	8		0.355	0.347	0.01	0.054		1.31	17
2/24/98	C	13:00	4.55	80.4	7.34	12.9	8	8		0.411	0.363	0.01	0.029		1.42	8.1
2/25/98	C	9:05	4.6	80	6.89	12.2	8	8	19	0.382	0.377	0.01	0.026		1.42	6.3
2/26/98	C	13:15	4.6	82.9	7.43	12.8	4	3		0.375	0.359	0.01	0.034		1.47	9.4

* Channel area sampled: R = right, L = left, C = center.
Double underlined values are below stated detection limit.
Single underline values are estimates.

Table 6. Water quality data collected from the main stem Nooksack River at Everson (MS-5).

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
3/18/97	C	11:35	6.6	71.7		12.1	32	16			0.331	0.012	0.086	0.01	1.04	65
4/28/97	R	1130					5	5	1							
	L	1132					8	8								
	C	1135	6.9	50	6.46	11.7				0.247		0.02	0.165	0.025	1.01	50
4/30/97	R	8:40					6	6	4							
	L	8:45					3	3	1							
	C	8:50	6.6	72		11.6				0.219	0.222	0.018	0.026	0.005	0.981	28
5/13/97	R	13:10					17	14	7	0.177	0.114	0.038	0.143			
	L	13:15					6	6	9	0.186	0.11	0.034	0.105			
	C	13:20	9.8	45	7.37	10.8				0.187	0.114	0.037	0.136	0.005	0.693	80
5/14/97	R	11:35					37	37	13							
	L	11:40					23	23	13							
	C	11:45	9.8	43	7.24					0.204	0.072	0.03	0.144	0.005	0.678	140
6/16/97	R	13:00					21	18	6						0.674	
	C	13:05	11.4	59	7.76	11.0				0.108	0.1	0.01	0.044	0.005	0.704	85
	L	13:10					12	9	12						0.709	
6/18/97	R	17:53					34	34	18							
	C	17:55	11.3	55	7.7					0.092	0.046	0.01	0.057	0.009	0.61	180
	L	17:57					45	45	9							
7/21/97	R	10:55					28	26	11	0.179	0.152	0.01	0.094			
	C	11:05	13	66	7.71	10.4								0.006	0.924	80
	L	11:00					32	30	10	0.12	0.097	0.01	0.093			
8/25/97	R	11:00					9	8	7	0.118	0.091	0.01	0.047	0.005	0.984	
	C	11:10	12.3	90	7.7	10.5										
	L	11:05					12	11	5	0.111	0.099	0.01	0.045	0.005	0.992	
8/26/97	R	10:20					8	8		0.095	0.081	0.01	0.041	0.005	1.03	
	C	10:30	11.9	87	7.2	10.4										
	L	10:25					9	9		0.068	0.084	0.01	0.041	0.005	1.02	
8/27/97		9:30	11.7	82	7.4	10.5	160	160	89	0.127	0.095	0.01	0.143	0.09	0.838	
9/22/97	C	9:15	11.2	105	7.73	10.4	35	33		0.232	0.204	0.01	0.047	0.018	1.15	14
9/23/97	C	9:50	11.5	108	7.68		31	31	40	0.238	0.196	0.01	0.062	0.005	1.18	11
9/24/97	C	9:10	11.3	110	7.28		11	10		0.221	0.196	0.01	0.059		1.14	12
11/16/97	C	11:15	5	110	7.04	12.5	1	1	4		0.275	0.01	0.036		1.55	5
11/17/97	C	9:38	5.8	115	7.12		11	11			0.257	0.01	0.041		1.56	13
11/18/97	C	8:40	5.9	100	7.23		82	78	300		0.272	0.011	0.035		1.53	25
11/19/97	C	9:18	5.8	100	7.12		16	16			0.276	0.01	0.032		1.63	8.6
2/23/98	C	9:35	4.7	123	7.49	12.2	8	7	10	0.375	0.344	0.01	0.049		1.32	19
2/24/98	C	8:59	3.6	8.3	7.29		12	12		0.416	0.371	0.01	0.033		1.29	9.7
2/25/98	C	8:25	4.5	90	7.06	12.3	1	1	5	0.392	0.37	0.01	0.028		1.35	6.2
2/26/98	C	9:25	4.4	80	6.92	12.4	3	3		0.38	0.355	0.01	0.02		1.4	8.8

* Channel area sampled: R = right, L = left, C = center.
Double underlined values below stated detection limit.
Single underline values are estimates.

Table 7 p.1. Water quality data collected from the main stem Nooksack River at Highway 542, North Cedarville (MS-6).

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	Flow[1] cfs	Flow[2] cfs	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
3/18/97	C	10:40	6.5	69.2	6.24	12.3	10500		16	15			0.317	0.01	0.086	0.01	0.962	60
5/13/97	R	11:30							12	11	6	0.193	0.099	0.039	0.1			
5/13/97	L	11:35							19	19	5	0.177	0.103	0.039	0.15			
5/13/97	C	11:40	9.4	43	7.37	11.5	8330	8110				0.161	0.104	0.043	0.132	0.005	0.691	45
5/14/97	R	9:20							40	37	6							
5/14/97	L	9:25							23	23	9							
5/14/97	C	9:30	8.3	41	7.3	11.8	9360	9325				0.193	0.101	0.027	0.15	0.005	0.823	110
									13	11	5						0.616	
6/16/97	R	11:35							16	12	8	0.105	0.09	0.01	0.045	0.005	0.604	69
6/16/97	L	11:45																
6/16/97	C	11:40	10.5	62	7.65	11.2	5390	5380									0.61	
6/18/97	R	16:46							31	29								
6/18/97	L	16:50							42	42								
6/18/97	C	16:48	10.5	55	7.77		8680	8550				0.083	0.031	0.01	0.058	0.006	0.544	140
7/21/97	R	9:30							42	41		0.169	0.129	0.01	0.06			
7/21/97	L	9:35							27	20		0.116	0.068	0.01	0.062			
7/21/97	C	9:40	13.0	64	7.79	10.6	4720	4800				0.185	0.145	0.01	0.069	0.007	0.662	70
8/25/97	R	10:00							10	10	2	0.071	0.034	0.01	0.048	0.005	0.841	
8/25/97	L	10:05							7	7	6	0.074	0.037	0.01	0.05	0.005	0.82	
8/25/97	C	10:10	12.2	87	7.8	10.6	2250	2250										
8/26/97	C	9:50	11.5	83	7.2	10.6	2290	2250	15	15		0.053	0.035	0.01	0.038	0.005	0.982	
8/27/97	C	8:25	11.6	78	7.6	10.6	2520	2625	110	110	68	0.116	0.062	0.01	0.127	0.005	0.745	
9/22/97	C	8:05	10.5	100	7.86	10.55	2200	2250	6	6		0.165	0.153	0.01	0.041	0.005	1.01	14
9/23/97	C	9:10	10.9	105		10.7	2150	2250	8	8	36	0.197	0.142	0.01	0.048	0.005	1.02	12
9/24/97	C	8:40	10.8	108	6.68	10.35	2100	2250	8	7		0.158	0.126	0.01	0.052		0.99	11
10/29/97	C	16:05	8.5	60			5650	6620	54	40								
10/29/97	C	22:20	8.5	65			5650	5580	14	11								
10/30/97	C	6:35	8.9	60			15300	15300	120	120			0.262	0.01	0.197			
10/30/97	C	13:10	9	55			15300	21700	80	80								
10/30/97	C	21:30	8.6	62			15300	12900	88	88								
10/31/97	C	6:20	8	62			12700	12700	29	29			0.311	0.01	0.137			
11/16/97	C	10:40	5.1	110	7.15	12.6	2020	2000	2	2	2		0.23	0.01	0.041		1.37	4.9
11/17/97	C	8:31	5.7	110	7.36		2270	2080	3	3			0.214	0.01	0.039		1.39	7
11/18/97	C	8:00	6	100	7.62		2750	2930	70	65	170		0.288	0.01	0.045		1.44	20
11/19/97	C	8:18	5.4	105	6.8		2300	2290	7	7			0.234	0.01	0.037		1.44	9.5
12/15/97	C	6:30	5.5	102	6.97		1910	1970	6	6								
12/15/97	C	13:05	5.5	105	6.41		1910	1880	9	9								
12/15/97	C	21:40	6	108	6.56		1910	1860	3	3			0.249	0.01	0.039			
12/16/97	C	7:35	5.2	110	6.69		7980	2520	18	18								
12/16/97	C	13:10	6.5	85	6.49		7980	6890	32	32			0.234	0.01	0.073			
12/16/97	C	20:25	5.6	55	6.01		7980	17000	51	51								

* Channel area sampled: R = right, L = left, C = center.

[1] Instantaneous flow at time of sampling at USGS Station 12210500 at Deming

[2] Mean daily flow at USGS Station 12210500 at Deming

Double underlined values below stated detection limit

Single underline values are estimates

Table 7 p.2. **Water quality data collected from the main stem Nooksack River at Highway 542, North Cedarville (MS-6).**

Date	Position* (R, C, L)	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	Flow[1] cfs	Flow[2] cfs	FC #/100 mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
1/27/98	C	13:55	6.1	76	7.17		5350	5230	12	12								
1/27/98	C	20:25	5.6	77			5350	5710	1	1								
1/28/98	C	6:35	5.3	79			4510	4500	1									
1/28/98	C	11:55	5.8	80			4510	4450	10	10								
1/28/98	C	19:55	6.4	80			4510	4510	4	4			0.307	0.01	0.082			
1/29/98	C	6:50	5.8	79			4600	4480	9	9			0.303	0.01	0.044			
2/23/98	C	8:40	4.5		7.37	12.3		2620	5	5	12	0.314	0.299	0.01	0.046		1.1	14
2/24/98	C	7:55	3.3	80	7.14			2290	5	4		0.326	0.319	0.01	0.036		1.18	7.8
2/25/98	C	7:50	4.8	90	7.07			2170	4	4	3	0.33	0.303	0.01	0.034		1.15	9.9
2/26/98	C	8:25	4.0	86	7.08	12.6		2130	8	8		0.312	0.297	0.01	0.032		1.24	9

* Channel area sampled: R = right, L = left, C = center.

[1] Instantaneous flow at time of sampling at USGS Station 12210500 at Deming

[2] Mean daily flow at USGS Station 12210500 at Deming

Double underlined values below stated detection limit

Single underline values are estimates

Table 8 p.1. Water quality data collected from tributaries in the lower Nooksack River basin.

Smith Creek at Lind Road*

Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
4/28/97	10:05	8	105	6.41	11.3	20	250	180		0.538	0.445	0.017	0.05	0.006	1.96	
5/13/97	10:30	13.2	114	7.77	10.1	8.4	290	260	80	0.595	0.423	0.024	0.079	0.005	2.25	
5/14/97	8:55	13.6	118	7.5	9.9	6.6	190	190	37	0.558	0.444	0.029	0.094	0.014	2.4	
6/16/97	11:10	15.4	160	7.45	9.9	2.5	470	430		0.525	0.564	0.01	0.037	0.01	2.76	
6/18/97	16:20	14.4	98	7.84	9.8	12.2	330	330		0.288	0.265	0.01	0.042	0.01	1.63	
7/21/97	8:55	16.3	140	7.78	9.3	1.9	470	440	280	0.561	0.456	0.01	0.026	0.012	2.3	
11/17/97	735	5.5	150	7.9	11.5	1.18	75	75			0.576	0.01	0.037		3.24	
11/19/97	845	5.8	120	6.99		1.19	96	88			0.459	0.01	0.04		2.94	1.6
2/24/98	7:20	3.2	95	7.08		20.3	100	84		0.741	0.634	0.01	0.05		2.14	9
2/26/98	7:45	3.9	98	7.14		16.1	290	220		0.771	0.662	0.01	0.036			

* Did not sample in March. Creekbed dry August & September.

Anderson Creek at Martin Road

Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
3/18/97	9:58	7.4	64.1	6.7	11.6	117	440	320			0.556	0.031	0.199	0.01	2.09	110
5/13/97	9:56	13.6	87	7.31	9.7	8.3	190	160	76	0.617	0.391	0.031	0.098	0.006	3.12	
5/14/97	10:05	14.3	90	7.1	9.6	6.4	300	300		0.562	0.409	0.045	0.111	0.016	3.32	
6/16/97	12:30	15.8	120	7.53	9.3	5.6	310	270		0.383	0.299	0.01	0.032	0.01	5.75	
6/18/97	17:27	16.9	125	7.53	9.0	6.7	930	930		0.403	0.344	0.01	0.046	0.02	5.25	
7/21/97	10:30	16.6	120	7.49	8.9	3.4	550	540	250	0.52	0.347	0.01	0.041	0.023	4.11	
8/27/97	9:10	15.1	185	7.2	8.35	1.9	1800	1800		0.684	0.436	0.01	0.07	0.023	11.4	
9/22/97	8:40	12	150	7.65	9.25	1.6	3200	3000		0.694	0.535	0.01	0.055	0.015	6.6	
9/24/97	8:20	12.2	160	7.1	9.1	1.6	85	77		0.579	0.392	0.01	0.058		7.4	
11/17/97	9:10	4.9	135	7.0	12	6.2	36	36			0.565	0.01	0.055		5.55	
11/19/97	7:43	5.2	130	7.13		9.4	96	84			0.542	0.02	0.076		6.51	13
2/24/98	8:30	3.1	80	7.08		37	850	850		1.16	0.832	0.025	0.093		3.27	37
2/26/98	8:50	4.1	95	7.08		31	250	250		0.986	0.725	0.011	0.073			

Kamm Creek[1]

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
KAM1	3/18/97	12:50	7.8	177	6.7	9.7	70	260	180			2.91	0.068	0.122	0.026	8.28	10
	4/29/97	8:35	11.1		6.58	8.3	28	390	370	100	4.3	4.16	0.125	0.11	0.033	10.8	
	4/30/97	9:18	11.0	250		7.9	17	320	320		3.75	3.55	0.069	0.1	0.029	11.5	
	5/12/97	12:35	15.9	223	6.98	7.1	16	240	190	14	3.39	3.06	0.121	0.131	0.032	10.8	
KAM1	5/14/97	12:10	16.5	225	6.44	5.8	12	250	230	31	3.96	3.87	0.131	0.113	0.022	10.9	
	6/18/97	8:54	15.61	231	7.08	6.6	16	1000	1000		3.04	4.13	0.198	0.093	0.038	10.4	
	7/21/97	15:05	16.1	249	6.98	8.06	11.4	300	300		4.46	4.86	0.099	0.072	0.025	11.4	
	7/23/97	12:55	16.3	248	7.02	8.79	11.4	310	300		4.95	4.74	0.065	0.09	0.018	11.2	
	8/4/97	13:05	17.62	237	7.17	9.7	7.1	220	220	81	5.04	4.9	0.014	0.052	0.018	10.2	
	8/27/97	13:55	14.5	241	6.9	8.9	6.6	1200	1200		6.42	6.39	0.144	0.072	0.021	11	
	9/22/97	12:20	13.6	222	7.06	9.6	8.8	690	670		5.85	5.77	0.021	0.082	0.017	10.6	
	9/24/97	12:40	13.99	215	7.02	9.1	7.1	900	870		5.46	5.37	0.015	0.094		10	
	11/17/97	13:25	6.9	240	7.13	9.34	13.3	170	170			5.46	0.128	0.077		13.4	
	11/19/97	12:50	7.1	230	6.57	9.9	13.3	670	670			7.53	0.046	0.082		14.7	6.1
	2/24/98	12:44	6.2	237	7.02	10.6	19	400	400		6.37	6.58	0.161	0.123		12.6	33
	2/26/98	12:55	6.06	222	7.04	10.00	21.3	570	570		5.78	5.5	0.196	0.121		12.8	27

[1] Samples for KAM1 taken at Hampton Road

Table 8 p.2. Water quality data collected from tributaries in the lower Nooksack River basin.

Scott Ditch[1]

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
SCO1	3/18/97	14:10	9.5	307		8.2	74	540	320			3.07	0.416	0.204	0.077	22.8	55
	4/28/97	12:00	9.9	275	6.65	7.8	22	300	220		3.37	2.67	0.447	0.09	0.02	29.2	
	4/30/97	9:55	9.4	350		7.7	27	80	72		3.25	2.75	0.381	0.075	0.012	29	
	5/12/97	13:25	12.4	315	6.88	7.96	16	620	540	32	2.72	2.14	0.346	0.12	0.007	30.3	
SCO1	5/14/97	13:20	13.6	302	6.52	9.2	13	320	320	65	2.93	2.32	0.337	0.124	0.005	29.2	
	6/18/97	9:37	13.42	310	6.68	6.09	16	1200	1200	120	2.18	2.08	0.233	0.055	0.018	27.2	
	7/21/97	15:25	14.2	344	6.81	7.4	12	230	230		2.85	2.42	0.22	0.049	0.017	31.6	
	7/23/97	13:15	13.9	337	6.78	7.57	11	280	270		2.95	2.33	0.199	0.128	0.006	30.1	
	8/4/97	14:00	15.57	331	7.04	8.9	8.9	440	440	130	2.85	2.32	0.094	0.075	0.009	27.6	
	8/27/97	14:35	14.3	342	6.8	7.7	5.6	1700	1600		3.47	3.08	0.118	0.065	0.006	29.4	
	9/22/97	13:00	12.3	308	6.9	7.7	8.1	290	250		2.92	2.25	0.252	0.243	0.005	29.1	
	9/24/97	13:15	12.7	302	7	7.4	9.4	270	260		3.11	2.42	0.195	0.173		29.5	
	11/17/97	14:05	7.78	350	6.87	7.65	11.81	46	46			2.63	0.187	0.121		36.5	
	11/19/97	13:20	7.9	367	6.75	7.62	14	33	33			2.47	0.232	0.085		38.2	26
	2/24/98	13:15	6.26	325	6.95	9.37	23	80	80		4.34	3.83	0.384	0.143		29.3	34
	2/26/98	13:28	6.92	327	6.96	9.28	21.2	140	140		4.06	3.61	0.314	0.137		29.5	33

[1] Samples for SCO1 taken at Bylsma Road

LLPL

Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
4/29/97	9:40	10.4	340	6.62		1	14000	14000	1400	4.78	4.13	0.483	0.189	0.05	36.1	
7/22/97	11:45	15.83	398	6.74	5.6	0.4				4.54	4.15	0.115	0.062	0.013	31	
8/4/97	14:12	18.45	365	7.23	6.9	0.75	870	870	110	3.93	3.37	0.037	0.056	0.011	27.5	
8/27/97	15:05	15.7	385	7.0	6.0	0.5	1600	1600		5.16	4.58	0.089	0.074	0.009	25.9	
9/22/97	13:25	13	375	7.0		0.5	800	770		4.76	4.44	0.032	0.105	0.005	30	
11/18/97	12:20	6.5	418	6.74	6.03	1.3	360	360	180		4.12	0.236	0.112		41.2	18
11/19/97	13:35	6.7	430	6.82	6.96	1.3	46	46			5.45	0.138	0.084		46.8	10
2/24/98	13:35	5.61	422	6.98	8.65	1.6	140	140		7.35	6.98	0.225	0.117		42.1	16
2/26/98	13:45	5.95	435	7.01	7.45	1.3	4900	4900		7.49	6	0.95	0.215			

Table 8 p.3. Water quality data collected from tributaries in the lower Nooksack River basin.

Fishtrap Creek[1]

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. col/100mL	E. Coli col/100mL	Entero. col/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
FIS1	3/18/97	13:30	8.3	202	6.8	10.5	283	1800	430			3.12	0.215	0.125	0.013	9.31	25
	4/29/97	10:10	10.6	250	6.7	10.2	106	380	330	96	3.51	3.61	0.042	0.077	0.009	10.5	
	4/29/97	15:55	12.5	245	6.7		105	220	220		3.43	3.47	0.032	0.046	0.01	10.4	
	4/30/97	10:17	10.5	250		10.0	99	250	230	5	3.76	3.47	0.068	0.04	0.007	10.4	
	5/12/97	13:55	14.3	236	7.4	9.9	68	380	340	34	2.99	2.89	0.046	0.1	0.005	10.7	
FIS1	5/14/97	12:50	15.2	239	7.2	9.9	56	250	240	34	3.14	3.06	0.038	0.112	0.005	11.1	
	6/18/97	10:03	13.81	225	7.3	8.99	68	2100	2100	360	2.16	2.53	0.014	0.053	0.009	9.8	
	7/21/97	15:35	15.5	255	7.6	10.0	49	230	220		3.17	3.21	0.015	0.052	0.012	10.9	
	7/23/97	13:32	13.9	254	7.6	10.6	44	350	350	89	3.08	2.79	0.01	0.066	0.005	11	
	8/4/97	14:33	18.0	249	7.9	10.9	33	470	470	57	2.91	2.57	0.01	0.086	0.009	10.7	
	8/25/97	15:40	16.6	247	7.7	11.4	20	320	320		2.58	2.43	0.017	0.042	0.005	10.2	
	8/26/97	13:05	14.8	243	7.5	9.7	25	930	930	540	2.52	2.61	0.013	0.068	0.005	9.88	
	8/27/97	15:25	15.7	242	7.5	10.7	26	1200	1200		1.36	2.57	0.01	0.067	0.005	11.1	
	9/22/97	13:45	14	227	7.3	10.1	31	320	290		2.35	2.23	0.01	0.06	0.005	12.1	
	9/23/97	13:20	14.1	229	7.31	9.95	29	360	350	140	2.41	2.46	0.012	0.251		12.9	
	9/24/97	13:45	14.4	241	7.41	9.82	28	320	320		2.61	2.35	0.01	0.055		12.7	
FIS1	10/29/97	1715	10.5	210			177	2700	2700								
FIS1	10/29/97	2334	10.5	185			183	5900	5900								
FIS1	10/30/97	740	10.8	190			212	3900	3900			2.15	0.234	0.203			
FIS2	10/30/97	1420	11.5	185			550	2900	2900								
FIS2	10/30/97	2236	11	190			415	5500	5500								
FIS1	10/31/97	725	10.8	210			230	2000	2000			2.55	0.222	0.187			
	11/16/97	1220	6.8	280	6.83	11.6	53	100	100	80		2.76	0.027	0.062		11.7	10
	11/17/97	1429	7.03	222	7.17	10.9	62	410	410			2.8	0.111	0.074		11	
	11/18/97	1300	7.57	224	7.13	11.2	65	240	230	240		2.89	0.038	0.06		11	11
	11/19/97	1355	7.5	229	7.14	11.3	63	130	130			2.1	0.04	0.057		11.7	10
FIS1	12/15/97	755	7.3	290	6.74		69	280	280								
FIS1	12/15/97	1410	7.2	255	6.55		69	220	220								
FIS1	12/15/97	2255	7	250	6.54		70	200	200			3.05	0.051	0.045			
FIS1	12/16/97	855	8	230	6.6		135	1100	1100								
FIS1	12/16/97	1450	8.3	195	6.47		300	2900	2900			2.48	0.282	0.072			
FIS1	12/16/97	2144	7.2	145	6.36		444	3000	3000								
FIS1	1/27/98	1520	8.3	210			279	120	120								
FIS1	1/27/98	2135	7.8	210			254	110	110								
FIS1	1/28/98	746	5.4	215			231	220	71								
FIS1	1/28/98	1305	7.5	220			244	320	320								
FIS1	1/28/98	2105	7.8	220			229	120	120			3.59	0.16	0.117			
FIS1	1/29/98	800	7.8	230			205	51	51			3.64	0.109	0.099			
	2/23/98	1030	6.2	255	6.83	10.2	89	71	66	40	3.53	3.5	0.055	0.072		10.3	17
	2/24/98	14:00	6.8	223	7.18	11.7	86	63	63		3.41	3.47	0.044	0.076		10.4	15
	2/25/98	9:45	6.8	195	6.88	11.1	97	140	140	170	3.24	3.25	0.056	0.063		10.1	20
	2/26/98	14:03	6.66	205	7.25	11.7	123	540	540		3.46	3.24	0.074	0.094		9.47	23

[1] Samples for FIS1 collected at River Road; FIS2 at Flynn Road

Bertrand Creek[1]

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O.	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
BER1	3/18/97	1445	7.4	131			1100	770			1.78	0.227	0.179	0.05	6.26	26	
	4/28/97	12:15	11.2	210	7.05	9.2	133	140	130		2.42	2.26	0.064	0.125	0.04	12.1	
	4/30/97	10:40	11.0	208		9.2	138	290	270	84		2.09	0.048	0.073	0.023	11.2	
	5/12/97	14:05	15.7	218	7.1	9.0	73	160	130	10	2.41	2.03	0.089	0.136	0.023	13.3	
	6/18/97	10:20	14.96	215	7.13	8.54	73	2200	2200	270	2.09	2.29	0.077	0.08	0.027	12.1	
	7/21/97	15:45	16.4	258	7.11	8.6	43	200	200		2.88	2.75	0.029	0.05	0.021	15.7	
	8/4/97	14:50	18.93	272	7.42	10.9	18.1	210	210	14	3.46	3.06	0.035	0.042	0.01	17.6	
	8/25/97	15:55	16.3	275	7.3	10.2	16	200	200		3.6	3.79	0.057	0.049	0.005	19.2	
	8/26/97	13:30	14.2	277	7.2	9.4	18	520	510	320	3.63	3.87	0.051	0.057	0.005	19.4	
	8/27/97	15:35	15.6	273	7.2	10.4	14.1	820	810		3.47	3.68	0.036	0.048	0.005		
	9/22/97	14:00	14.1	255	7.1	9.2	21.7	160	140		2.97	2.59	0.03	0.07	0.006	18.7	
	9/24/97	13:45	14.3	253	7.1	8.9	18.7	92	92		2.82	2.6	0.026	0.044		20.7	
	11/17/97	1440	6.62	244	6.91	9.98	62	92	92			2.86	0.174	0.076		18	
	11/18/97	1335	6.82	213	7.04	10.58	66										
	11/19/97	1405	6.98	214	7.05	10.57	73	220	220			2.62	0.094	0.072		16.5	11
	2/24/98	14:10	6.5	210	7.1	11.3	103	140	140		3.17	3.08	0.085	0.084		13.6	15
	2/26/98	14:16	5.75	164	7.22	11.73	159	800	800		2.57	2.16	0.106	0.112		10.4	19

[1] Samples for BER1 taken at Rathbone Road

Table 8 p.4. Water quality data collected from tributaries in the lower Nooksack River basin.

Keefe Lake Outlet

Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
4/29/97	10:58	11.8	220	6.42	7.6	20	140	88	84	2.37	1.85	0.054	0.089		27	
4/30/97	11:25	11.6	275		7.4	22	51	48		2.1	1.69	0.047	0.065	0.022	27.1	
7/22/97	13:10	18.07	292	6.53	6.05	5				1.73	0.97	0.026	0.054	0.012	32.7	
8/4/97	15:35	21.6	284	6.94	7.5	2.6	360	360	12	1.31	0.771	0.034	0.065	0.008	32.8	
8/27/97	16:15	17.5	270	6.8	6.9	3.4	260	260		1.46	0.969	0.085	0.071	0.006	30.9	
9/22/97	14:45	15.1	256	6.8	7.6	3.9	80	80		1.34	0.915	0.015	0.111	0.005	32.3	
9/24/97	14:25	15.9	287	6.8	7.1	3.9	120	100		1.36	0.972	0.017	0.094		33.7	
11/17/97	15:00	5.76	287	6.68	8.77	4.6	19	19			1.73	0.063	0.066		36.9	
11/19/97	14:25	6.77	290	6.96	9.08	4.6	9	9			0.925	0.05	0.089		37.9	18
2/24/98	14:35	6.1	7.02	254	9.4	14	140	140		2.64	2.18	0.065	0.118		28.6	27
2/26/98	14:34	6.38	6.94	252	9.7	11	210	210		2.41	2.04	0.054	0.085			

Wiser Lake Outlet[1]

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
WIS1	3/17/97	14:50	7.5	237		8.2		14				1.66	0.015	0.053	0.01	15.3	2.5
	4/29/97	11:50	12.4	240	6.39	6.3	15	84	72	18	2.12	1.83	0.031	0.062		21.5	
	4/30/97	11:10	11.5	290		5.0	13	51	51		2.07	1.86	0.027	0.077	0.006	21.4	
	5/12/97	14:35	15.4	289	6.9	6.6	10	88	80	21	2.17	1.47	0.093	0.098	0.006	23.8	
	6/18/97	10:50	13.19	313	6.64	3.3	10	520	520	96	1.28	1.46	0.022	0.041	0.006	26.6	
	7/22/97	13:20	17.83	320	6.81	5.81	7				1.53	0.917	0.022	0.086	0.016	26.7	
	8/4/97	15:50	17.3	350	7.13	8.5	2.1	160	160	140	2.32	1.97	0.021	0.046	0.005	29.4	
	8/27/97	16.35	17.1	346	6.8	5.7	6.6	200	190		1.37	0.926	0.042	0.063	0.007	31.9	
	9/22/97	14:50	14.4	307	6.9	5.5	3.2	120	120		1.3	0.978	0.011	0.073	0.01	28.3	
	9/24/97	14:35	14	327	6.8	5.2	3.2	140	140		1.52	1.3	0.021	0.039		29.8	
	11/17/97	15:10	6.1	290	6.95	7.62	8.2	56	56			2.1	0.029	0.054		26.7	
	11/19/97	14:35	6.85	291	6.93	7.37	8	33	33			3.85	0.035	0.046		26.5	2.2
	2/24/98	14:45	6.48	270	7.06	8.68	13.0	39	39		3.11	2.98	0.013	0.07		21.5	7.2
	2/25/98		6.54	268	7.00	8.29											
	2/26/98	14:55	6.89	268	7.05	8.83	13.0	33	33		2.86	2.72	0.01	0.052			

[1] Samples for WIS1 taken at Northwest Road

Table 8 p.5. Water quality data collected from tributaries in the lower Nooksack River basin.

Tenmile Creek[1]

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU
	3/17/97	1425	6.9	161		8.5	109	750				1.09	0.106	0.101	0.023	9.87	9
	3/18/97	1625	8.9	168			154	590	350			1.18	0.097	0.098	0.029	10.7	7.7
	4/28/97	1500	11.7	260	6.46	7.4	40	110	84		1.58	1.2	0.022	0.068		20.7	
	4/30/97	1420	11.2	250		6.4	41	72	71	78	1.66	1.02	0.023	0.065	0.017	19	
	5/12/97	1455	15.9	260	7.06	7.3	28	200	200	47	1.12	0.8	0.067	0.09	0.016	21.8	
TEN1	5/14/97	1740	17.2	273	6.82		23	400	380	96	1.19	0.886	0.078	0.104	0.018	24.3	3.9
	6/18/97	1110	14.7	312	6.76	2.93	28	1400	1400		1.23	1.21	0.037	0.074	0.027	27.6	
	7/22/97	1447	16.9	337	7.13	8.2	19				1.55	1.14	0.01	0.08	0.022	32.5	
	8/4/97	1615	19.1	377	7.52	10	14	150	150	51	1.55	1.19	0.015	0.054	0.008	43.2	
	8/25/97	1635	16.4	275	7.3	8.8	8	700	700		1.51	1.36	0.034	0.123	0.013	48.3	
	8/26/97	1410	14.8	402	7.1	6.7	10	2100	2100	2400	1.5	1.38	0.085	0.072	0.01	46.5	
	8/27/97	1700	16.9	404	7.2	9.2	11	500	490		1.66	1.45	0.057	0.061	0.007	45.5	
	9/21/97	16:00					14	72	60	46	1.36	1.13	0.01	0.087	0.016		
	9/22/97	15:15	14.5	354	7.1	9	14	62	62		1.46	1.09	0.01	0.081	0.005	42.3	
	9/23/97	14:50	14.4	353	7.1	8.8	12.5	88	84	60	1.46	1.1	0.01	0.087		42.7	
	9/24/97	15:00	14.8	353	7.1	8.9	11.2	100	96		1.35	1.17	0.01	0.076		43.3	
TEN1	10/29/97	17:20	11.1	380			76	1600	1600								
TEN1	10/29/97	0:02	10.5	325			79	910	910								
TEN1	10/30/97	8:20	10.7	305			92	2900	2900			1.46	0.022	0.212			
TEN2	10/30/97	14:40	11.9	285			247	4500	4500								
TEN2	10/30/97	11:04	11.8	255			184	4300	4300								
TEN1	10/31/97	8:05	10.6	290			100	2500	2500			1.31	0.057	0.234			
	11/16/97	14:45	5.8	312	7.2	9.3	20.9	390	390	120		1.3	0.034	0.089		34.6	13
	11/17/97	15:35				9.3	21	2600	2600			1.44	0.15	0.108		36.5	
	11/18/97	14:30	7.37	311	7.06	8.53	22	550	550	59		1.44	0.046	0.071		34.2	6
	11/19/97	14:55	7.15	296	7.01	7.44	21	360	360			0.788	0.044	0.086		33.3	11
TEN1	12/15/97	8:22	6	270	6.59		28	170	170								
TEN1	12/15/97	14:40	6.4	285	6.35		28	84	84								
TEN1	12/15/97	23:20	6.7	230	6.55		29	110	110			1.5	0.021	0.052			
TEN1	12/16/97	9:20	7.8	285	6.65		57	220	220								
TEN1	12/16/97	15:15	7.9	280	6.52		132	840	840			1.48	0.058	0.08			
TEN1	12/16/97	22:10	6.7	100	6.56		198	460	460								
TEN1	1/27/98	15:45	8.3	200			122	200	200								
TEN1	1/27/98	22:05	7.1	200			111	150	150								
TEN1	1/28/98	8:15	6.5	180			100	130	130								
TEN1	1/28/98	13:30	7.1	190			106	140	140								
TEN1	1/28/98	21:30	7.4	190			99	100	100			1.7	0.012	0.126			
TEN1	1/29/98	8:35	7.2	198			88	84	84			1.73	0.013	0.112			
	2/23/98	13:10	7.57	266	7.18	9.48	44	96	80		2.1	1.93	0.027	0.087		24.2	8.1
	2/24/98	15:00	6.8	239	7.16	9.96	44	71	71		2.07	1.66	0.013	0.08		20.6	10
	2/25/98	14:00	6.6	236	6.95	9.6	44	350	350		1.96	1.64	0.031	0.076		21.5	8.1
	2/26/98	15:10	6.9	232	7.2	9.9	44	160	160		1.91	1.62	0.024	0.065			

[1] Samples for TEN1 taken at Paradise Road; TEN2 taken at Northwest Road

Silver Creek at Marine Drive

	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	Flow cfs	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Ortho P mg/L	Chloride mg/L	Turbidity NTU	D.O.* mg/L	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL
	4/28/97	1628	11.9	210		5.2		140	120		0.417	0.11	0.031	0.118		20.9			130	79
	4/30/97	1615	11.2	265		5.3		52	44		0.734	0.09	0.02	0.07	0.029	21.5			33	33
	5/13/97	1650	16.2	69	7.04	8.2		130	120	110	0.314	0.145	0.034	0.075	0.005	2.39		9.8		
	5/14/97	1850	15.8			11.3		340	320	51	0.31	0.126	0.041	0.103		5.34				

D.O.* = multi-probe meter measurement. Temperature, pH, and conductivity also taken by multi-probe meter at this time.
Single underlined values are estimates; double underlined values are below detection limits.

Table 9. Water quality data from miscellaneous drains, drainages, and main stem sites infrequently sampled during the 1997-98 lower Nooksack River basin TMDL surveys.

Site* Name	Date	Time	Temp. °C	Cond. umhos/cm	pH s.u.	D.O. mg/L	D.O.** mg/L	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Entero. cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Ortho P mg/L	Total P mg/L	Chloride mg/L
CUL	4/29/97	1350	9.5	90	6.8			31	20		0.372	0.355	0.017	0.005	0.024	2.82
ABFER	4/29/97	1335	12	300	6.88			69	63		1.51	0.961	0.056	0.05	0.071	24.7
	8/26/97	1425						38,000	38,000							
	2/25/98	1410	7.03	258	7.14	11.2		53	53		0.981	0.958	0.07		0.078	
I5BR	4/29/97	1320	11.8	430	6.79	7.1	6	53	55		4.12	2.74	0.409		0.441	51
MCK	2/25/98	1350	7.61	756	6.6		9.96	1	1		34.6	36	0.01		56	
SEV	4/29/97	1450	16	620	6.76	15.2		170	120		13.6	14.3	0.258		0.321	52.3
ABKAS	4/29/97	1510	14.5	285	6.83	11.1		250	240		2.33	2.14	0.028	0.034	0.117	22.3
	7/22/97	1425	19.5	286	7.15		8.6				2.76	2.42	0.06	0.028	0.088	23.7
	2/25/97	1325	7.08	279	7.12		10.59	80	80							
DBPL	4/29/97	1239	12.5	185	6.53	9		220	160	43	1.01	0.521	0.027		0.119	9.03
BFAR	4/29/97	1520	13	245	6.53	8.5		88	80		2.72	2.57	0.03	0.016	0.051	18.2
	7/22/97	1400	14.35	323	6.6		6.1				4.36	3.96	0.095	0.012	0.079	27.8
PUDMS	9/21/97	1540						55	49	53	0.364	0.327	0.01	0.01	0.047	
RBAK	4/29/97	1215	13.4	158	6.6	8.7		160	120	34	0.75	0.383	0.017		0.092	7.56
	7/22/97	1340	19.4	238	6.7		8				1.11	0.509	0.055	0.006	0.071	19.2
LELE	4/29/97	1040	11.2	340	6.49	5.6		57	54	34	3.19	2.41	0.191		0.075	28.1
	7/22/97	1255	19	421	6.37		5.7				5.14	4.15	0.602	0.005	0.041	44.4
	2/25/97	1155	6.8	389	6.87		7.5	100	100		5.46	4.7	0.421		0.124	
FISCUL	12/15/97	2250						160	160							
	12/16/97	900						280	280							
	12/16/97	1437						1200	1200			0.468	0.094		0.175	
MS-3.5	8/26/97	1250	11.9	81	7.6		10.9	32	32		0.135	0.146	0.01	0.005	0.064	1.16
	8/27/97	1455	12.9	71.8	7.4		11.2	84	84		0.208	0.178	0.01	0.006	0.107	1.07
D17	7/22/97	925	13.25	291	6.41		4.5				18.1	2.03	0.677	0.028	0.088	18.1
D17.5	7/22/97	950	15.06	238	6.65		6				1.29	0.101	0.323	0.037	0.091	9.23

* See Table 1 for site descriptions.

** Dissolved oxygen measurements taken with multi-probe meter. Conductivity, pH, and temperature of sample also taken by multi-probe meter.

Single underlined values are estimates.

Double underlined values are below detection limits.

Table 10. Water quality data collected during the June 17, 1997 drogue study between Ferndale and Marine Drive on the Nooksack River.

Site Name	Time	Temp. °C	D.O. mg/L	Cond. umhos/cm	pH s.u.	Fecal Col. cfu/100mL	E. Coli cfu/100mL	Total N mg/L	NO2+NO3 mg/L	NH3 mg/L	Total P mg/L	Chloride mg/L	Turbidity NTU	TSS mg/L	Fecal Col. MPN/100 mL	E. Coli MPN/100 mL	Field Latitude	Field Longitude
1st Run																		
RM5R	9:40					66	63	0.134	0.132	0.01	0.038	1.16	55	80	79	79		
	9:35	10.9	10.5	61.7	7.51												48.82785	122.589
RM5L	9:44					77	77	0.129	0.151	0.01	0.076	1.16		55	49	49		
RM4.5	9:46	10.9	10.47	61.7	7.4	49	49	0.165	0.18	0.01	0.085	1.16	60	90			48.82507	122.5864
RM4R	9:50					66	66	0.18	0.195	0.01	0.09	1.21	60	95				
	9:48	10.9	10.6	61.7	7.4												48.82352	122.581
RM4L	9:52					66	66	0.148	0.131	0.01	0.052	1.17	60					
RM3.5	9:59	11	10.51	61.8	7.48	63	63	0.132	0.119	0.01	0.06	1.17	55	79	170	70	48.81835	122.5803
RM3R	10:05					57	54	0.168	0.172	0.01	0.054	1.17	65	89				
	10:02	11	10.67	61.8	7.42												48.81423	122.584
RM3L	10:07					66	66	0.152	0.127	0.01	0.078	1.19	60					
RM2.5	10:15	11	10.74	61.8	7.36	63	63	0.12	0.122	0.01	0.069	1.21	60	88			48.80855	122.5816
RM2R	10:28					46	46	0.13	0.129	0.01	0.048	1.22	60	91				
	10:25	11	11.82	61.1	7.39												48.80198	122.5856
RM2L	10:30					46	46	0.129	0.126	0.01	0.077	1.18	60					
RM1.3R	10:52					92	92	0.148	0.183	0.01	0.067	1.19	60	99	49	33		
	10:50	11.1	10.64	62	7.38												48.79105	122.5895
RM1.3L	10:54					71	71	0.137	0.127	0.01	0.071	1.2	50		130	130		
2nd Run																		
RM5R	13:24					56	56	0.123	0.118	0.01	0.085	1.18	65	85	79	79		
	13:20	10.7	11.05	59.2	7.22												48.83867	122.5917
RM5L	13:26					80	80	0.112	0.12	0.01	0.097	1.1	65		110	110		
RM4.5	13:40	10.7	10.93	59.7	7.24	51	51	0.155	0.168	0.01	0.052	1.14	60	105			48.82548	122.5872
RM4R	13:48					110	110	0.146	0.165	0.015	0.041	1.04	60	90				
	13:45	10.7	12.83	59.7	7.2												48.82355	122.5807
RM4L	13:50					84	84	0.119	0.115	0.01	0.079	1.13	60					
RM3.5	13:55	10.8	12.78	57.7	7.2	51	49	0.144	0.165	0.01	0.083	1.14	65	113			48.81817	122.5809
RM3R	14:00					49	49	0.124	0.118	0.01	0.076	1.12	65	100				
	15:58	10.8	11.71	59.8	7.22												48.8134	122.5845
RM3L	14:02					80	80	0.119	0.117	0.01	0.084	1.14	60					
RM2.5	14:15	10.8	13.09	59.3	7.25	71	71	0.151	0.158	0.01	0.076	1.12	60	98			48.80432	122.5855
RM2R	14:25					77	77	0.157	0.164	0.01	0.062	1.11	60	101				
	14:20	10.9	10.93	60	7.3												48.79808	122.5908
RM2L	14:27					80	71	0.157	0.148	0.01	0.054	1.12	65					
RM1.3R	14:43					100	100	0.154	0.164	0.01	0.022	1.11	65	119	240	130		
	14:40	10.9	11.69	59.9	7.31												48.79112	122.5901
RM1.3L	14:45					84	84	0.143	0.168	0.01	0.057	1.14	60		240	240		

Double underlined values below stated detection limit
Single underline values are estimates

Table 11. Portage Bay data used to calculate bacteria decay coefficients for the Nooksack River TMDL Study.

			Marine Drive Bridge	Midway Site			Sta. 12			Sta. 13		
Agency*	Date	Flow (cfs)	Fecal col. (/100 mL)	Fecal col. (/100 mL)	Temp (deg. C)	Salinity (ppt)	Fecal col. (/100 mL)	Temp (deg. C)	Salinity (ppt)	Fecal col. (/100 mL)	Temp (deg. C)	Salinity (ppt)
DOH	10/29/96	11000	540	540			920.0					
DOH	12/5/96	9470	350	350	7		540.0	6	3			
DOH	12/18/96	3310	17	4.5	3	0	13.0	4	18	2.0	4	16
DOH	1/15/97	3550	13	1.8	1	0	1.7	0	2	1.7	3	10
DOH	2/12/97	3690	350	2	6	25	4.5	6	22	2.0	6	24
DOH	3/17/97	4090	130	4.5	8	15	6.8	8	18			
DOH	4/2/97	3490	1.8	1.8	9	3	1.7	8	3	1.7	9	25
DOH	5/12/97	7240	920	4.5	14	3	7.8	14	1	79.0	13	0
DOH	6/18/97	8490	130	49	17	4	7.8	17	10	23.0	17	9
DOH	7/23/97	3710	33	7.8	19		4.5	18		170.0	19	
DOH	8/27/97	2410	400	27			2.0	16	22	9.3	16	28
DOH	9/23/97	2150	49				2.0	16	26	7.8	15	26
DOH	11/18/97	2750	90	13	9	16	33.0	10	25	1.8	9	14
DOH	12/16/97	3580	23	33	8	19	79.0	8	24			
DOH	1/20/98	7700	79	350	7	0	49.0	8	5	110.0	7	3
DOH	2/17/98	3020	13	4	9	0	13.0	10	8	1.7	10	9
DOH	3/17/98	3130	13	1.8	11	28	1.7	11	25	1.7	12	25
DOH	4/14/98	1930	33	1.8	10	22	1.7	10	18	1.7	10	25
DOH	5/18/98	2590	49	4.5	14	7	1.7	14	16	2.0	14	24
DOH	7/14/98	2910	23	49	17	15	17.0	17	10	49.0	17	10
Co-op	9/22/97	2260	42	5	18.5	15.4	12	16.3	18			
Co-op	9/24/97	2070	49	10	13.0	29.1	5	14.0	28.9			
Co-op	10/29/97	6060	270	10	11.5	18.5	9	12.0	22.5			
Co-op	10/30/97	6650	440	260	10.0	3	20	11.0	13			
Co-op	10/30/97	7000	375	160	11.5	17.8	90	11.0	22.8			
Co-op	10/30/97	17500	1050	12	11.5	25.1	6	11.5	25			
Co-op	10/30/97	14000	590	150	10.0	11	160	10.0	6			
Co-op	10/31/97	10750	254	370	9.5	2.1	40	10.0	16			
Co-op	11/16/97	1840	6	1	8.8	22	4	8.0	21.2			
Co-op	11/18/97	2570	81	12	8.8	15.5	5	8.8	10.5			
Co-op	12/15/97	1810	31	10	6.8	25.6	9	7.0	27.7			
Co-op	12/15/97	1810	41.5				9	7.9	28.3			
Co-op	12/16/97	1740	30	30	6.9	23.4	20	7.8	29.1			
Co-op	12/16/97	2000	25.5	20	7.5	19.4	50	7.4	22.6			
Co-op	12/16/97	2560	47	30	7.8	24	29	8.5	29			
Co-op	12/16/97	9870	400	9	11.1	27	9	11.0	27			
Co-op	1/27/98	6720	43	7	7.9	0.9	7	7.8	5.5			
Co-op	1/27/98	6380	41.5	2	5.3	9.9	3	6.2	12			
Co-op	1/28/98	5890	31.5	23	6.6	11.2	20	6.6	16.5			
Co-op	1/28/98	5720	32	13	7.4	20.2	12	7.0	13.5			
Co-op	1/28/98	5660	50.5	10	7.2	16.7	19	6.9	14.3			
Co-op	1/29/98	5670	61.3	20	6.7	9.8	10	7.3	21.3			
Co-op	2/23/98	3050	8.5	1	8.4	11.8						
Co-op	2/24/98	2730	13.5	1	6.9	2.9	1	7.4	3.6			
Co-op	2/25/98	2610	51.5	1	7.4	16.6	1	7.6	21.4			
Co-op	2/26/98	2620	37	2	7.5	15.8	2	7.7	23.2			

* DOH = Washington Department of Health Office of Shellfish Programs

Co-op = Cooperative sampling between Washington Department of Ecology, Lummi Tribe, and Nooksack Tribe