WATER QUALITY STATUS REPORT ● REPORT NO. 82

MILK CREEK
Teton County, Idaho
1986

Idaho Department of Health and Welfare
Division of Environmental Quality
Water Quality Bureau
Boise, Idaho

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Prepared by
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ABSTRACT

Milk Creek was identified in the Agricultural Nonpoint Pollution Abatement Plan as a second priority stream segment for the reduction of agriculture related pollutants. A water quality study was conducted from March through June, 1986 as part of the agricultural planning process. The objectives of the study were to: 1) document the water quality impact that agricultural runoff has on Milk Creek; 2) determine the water quality impact of Milk Creek on the Teton River.

Due to lower than average winter precipitation rates and a cool dry spring, the runoff was much less than normal. Much of the water was retained in the soil and that which did run off flowed slowly with little erosive potential. Milk Creek is an intermittent stream which exhibits the characteristics of a loosing stream; the flow is greater at the higher elevations. Milk Creek reached the Teton River on only two sampling dates, both times with a flow of less than 3 cfs.

Water quality in Milk Creek showed no excessive amounts of suspended sediment, inorganic nitrogen, or total Kjeldahl nitrogen. Total phosphorus exceeded recommendations 6 out of 21 samples. Twice Milk Creek flows reached the Teton River when total phosphorus recommendations were exceeded, but the Milk Creek flow was less than 3 cfs. The much greater flow of the Teton River diluted any excessive nutrient concentrations to below recommendations.

Fecal coliform values exceeded standards for primary contact waters in 6 samples. On the one sampling date that high coliform concentrations could have reached the Teton River, the Milk Creek flow was measured at 2.8 cfs 1 mile above its mouth. The Teton River was not severely impacted by the bacterial contamination of Milk Creek at any time.

The extremely low flows in Milk Creek have made it impossible to determine the normal impact of agricultural practices on Milk Creek and the Teton River.

INTRODUCTION

Milk Creek is an intermittent tributary of the Teton River. The creek originates in the Big Hole Mountains on the Targhee National Forest and flows north to the Teton River approximately 3 miles east of the Teton-Madison county line (Figures 1 and 2). The Teton River is a major tributary of the North Fork (Henry's Fork) of the Snake River. The Teton River (USB-234) has been identified as a second priority stream segment in the Idaho Agricultural Pollution Abatement Plan (1983). A water quality study was conducted from March through June, 1986 as part of the agricultural planning process.

The current designated uses of the Teton River are as a domestic and agricultural water supply, cold water biota, salmonid spawning, primary and secondary contact recreation, and a special resource water by the Idaho water quality standards and are protected as such.

The Milk Creek watershed containes approximately 18,138 acres. Of this amount 15,800 acres are private land, most of which are used for agricultural purposes (Table 1).

Table 1. Land Ownership and Use in the Milk Creek Watershed (Acres)

Federal Forest		2,152
US Bureau of Reclamation		106
US Bureau of Land Management		80
Private		15,800
Dry Cropland	5,572	
Irrigated Cropland	6,454	
Range and Woodland	6,013	
Other	89	

The watershed is about 11 miles long and 6 miles wide at its widest point. Elevations range from 7,990 feet at the headwaters to 5,165 feet at the mouth of Milk Creek. Topography of the area is characteristic of Eastern Idaho, with rolling hills and steep mountainous terrain. Cropland slopes range from 2-25 %. Dry cropland rotations include grain-fallow, grain-grain-fallow, and annual cropping. Wheat and barley are the main crops although some operators include alfalfa-grass hay in their rotations. Irrigated cropland rotations include grain-potatoes, or grain-grain-potatoes. Irrigation systems are primarily high pressure center pivots.

Figure 1. Milk Creek Project Location

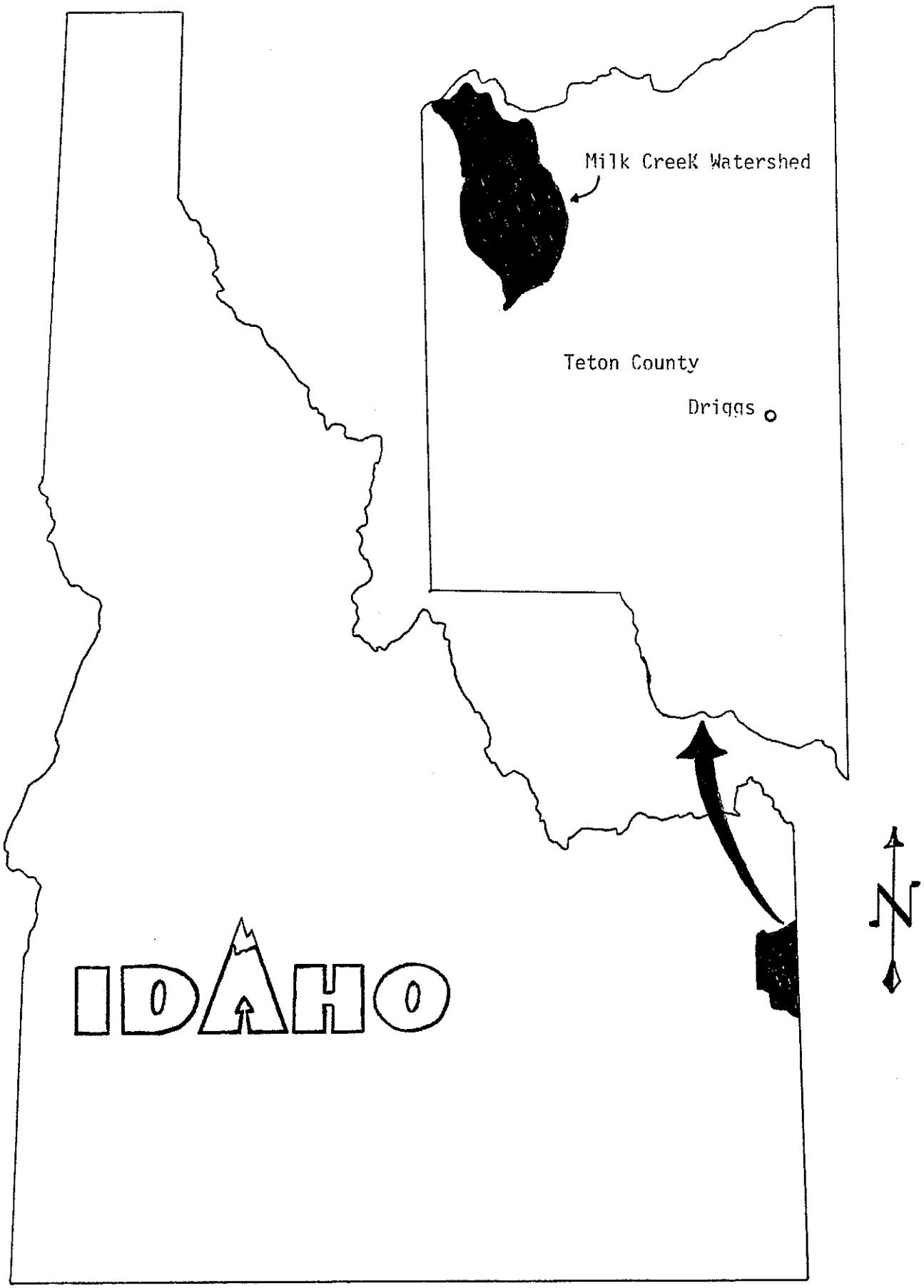
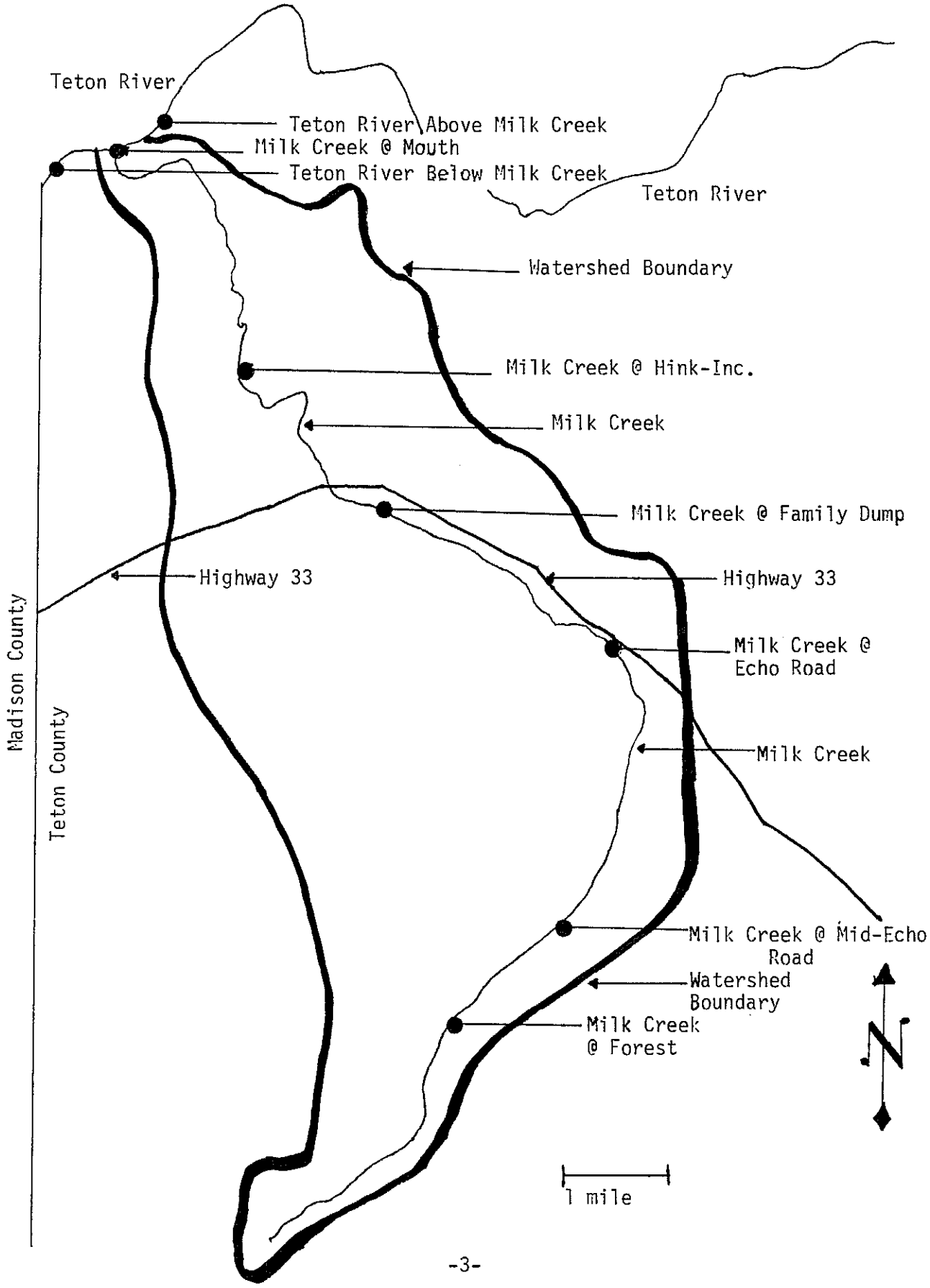


Figure 2: Milk Creek Watershed



The climate of the Milk Creek watershed is semi-arid with cool, moist winters and warm, dry summers. Annual precipitation ranges from 14 to over 22 inches in the higher elevations. Winter precipitation occurs mostly in the form of snow. The frost free growing season lasts about 53 days, but there are an average of 102 crop growing days per year (28° F or higher). The prevailing wind is out of the southwest and frequently reaches velocities in excess of 30 mph (Teton SCD, 1985).

The soils in the Milk Creek watershed are highly erosible. The main soil types are:

TETONIA-LANTONIA-RIRIE ASSOCIATION (11,246 acres)

This association is made up of very deep, loamy soils formed in loess. Elevations range from 5,800 to 6,200. These soils are used to grow wheat, barley, and seed potatoes. Surface runoff can be rapid and erosion can reach extreme levels.

KARLAN-ARD-SWANNER ASSOCIATION (6,892 acres)

These shallow to moderately deep, well drained upland soils were formed in loess and residuum over bedrock. The elevation ranges from 6,000 to 7,000 feet. The majority of these soils (≈75%) are dry-farmed with wheat and barley as the main crops. The remaining 25% are used for wildlife habitat. Surface runoff is medium to rapid with erosion rated as moderate to high (Teton SCD, 1985).

The primary objective of this survey was to determine if sediment is transmitted from the Milk Creek drainage to the Teton River in concentrations that impair beneficial uses of the water. Secondary objectives included trying to delineate critical areas within the drainage by sampling Milk Creek at upstream locations.

MATERIALS AND METHODS

Methods of sample collection, preservation, and analysis followed Standard Methods (APHA, 1985) and the National Handbook of Recommended Methods for Water Data Aquisition (USGS, 1977). All samples, except bacterial, were collected using a Bel-Art Products churn splitter from which separate samples were drawn. Bacterial samples were collected directly into the sample containers. Samples were collected from the center of the stream or from an area of complete mixing.

SAMPLE STATIONS

Six sampling stations were located on Milk Creek and an additional one was placed on the Teton River both above and below the Milk Creek confluence. Stations on Milk Creek were located to allow differentiation of the sources of pollutants entering the creek. Teton River stations were to be used to determine the pollution loading from Milk Creek (Table 2).

Sampling began in October 1985 to monitor low flow and continued through peak runoff. Sampling was scheduled to end in September 1986. Because Milk Creek is an intermittent stream, water quality was scheduled to be monitored biweekly during the runoff period and monthly thereafter.

The calculation of total solutes contributed during a one day period was based on the assumption that an individual sample was representative of the whole day.

PARAMETERS

Parameters which were sampled are shown in Table 3. Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Zinc, Flouride, Sulfate, Hardness, and Total Alkalinity were also sampled during high and low flows, but these parameters were well below standards and recommendated levels at all stations so they are not included in the discussion.

Flow

Direct measurement of stream velocity was made with a Marsh McBirney Model 201 flow meter. Cross sections of the creeks were made by measuring the stream width to the nearest tenth of a foot, and measuring the water depth to the nearest tenth of a foot. Velocities were measured each foot at 0.6 depth. Flow measurements were not taken on the Teton River.

Suspended Sediment

Suspended sediment is one of the prime indicators of nonpoint agricultural pollution. Suspended sediment consists of soil particles that are entrained in the water column from three inches above the stream bottom to the top of the water column (Clark, 1985). There were no suspended sediment samples taken until June, 1986, previously total

Table 2. Sample Stations for the Milk Creek Study

SURVEY NAME: MILK CREEK

116 = B61602 HUC = 17040204 DATE: 06/06/86

STORET #	ID#	DESCRIPTION	LATITUDE	LONGITUDE	RIVER MILE	ELEV
2080474	A	TETON R AB MOUTH OF MILK CR	43 55 43	111 23 00	324.3/1347.4/32.8/58.9	5150
2080475	B	TETON R BL MOUTH OF MILK CR	43 55 38	111 23 13	324.3/1347.4/32.8/58.7	5150
2080476	C	MILK CR MOUTH	43 55 17	111 22 45	324.3/1347.4/32.8/58.8/.6	5650
2080477	D	MILK CR @ HINK - INC	43 53 50	111 21 25	324.3/1347.4/32.8/58.8/3.5	5820
2080478	E	MILK CR @ FAMILY DUMP	43 52 43	111 19 51	324.3/1347.4/32.8/58.8/5.9	5970
2080479	F	MILK CR @ ECHO RD/HWY	43 51 46	111 17 24	324.3/1347.4/32.8/58.8/8.5	6120
2080480	G	MILK CR @ MID ECHO RD	43 49 06	111 17 51	324.3/1347.4/32.8/58.8/11.8	6480
20804B1	H	MILK CR @ FOREST SERVICE	43 48 47	111 18 55	324.3/1347.4/32.8/58.8/12.8	6680

Table 3. Parameters Sampled for the Milk Creek Study

Parameter	Storet #
Flow (cfs)	00061
Turbidity (NTU)	00076
Filterable Residue (mg/l) (Suspended Sediment)	70300
Total Nitrate as N (mg/l)	00620
Total Nitrite as N (mg/l)	00615
Total Ammonia as N (mg/l)	00610
Total Kjeldahl Nitrogen as N (mg/l)	00625
Total Phosphorus as P (mg/l)	00665
Total Hydrolyzable Phosphorus as P (mg/l)	00669
Dissolved ortho-Phosphate as P (mg/l)	00671
Fecal Coliform (colonies/ 100ml)	31616
Fecal Streptococcus (colonies/ 100ml)	31679

residue was sampled.

Nitrogen

Nitrogen is a primary plant nutrient and is applied in various forms to agricultural lands. This study looked at the four most common nitrogen compounds: nitrate, nitrite, ammonia, and total Kjeldahl nitrogen. Nitrate nitrogen is very soluable in water making it mobile in damp soils. The concentration of nitrate and nitrite in stream water usually shows an inverse relationship with flow at a given sample site (Mackenthun, 1973). Because of the rapid interchangeability of nitrate and nitrite, the reported values were combined into nitrate + nitrite.

The total Kjeldahl nitrogen (TKN) method was used to determine the amount of organic nitrogen in the sample. Because the TKN method does not distinguish between organic and ammonia nitrogen compounds, the total organic nitrogen was estimated by subtracting the ammonia concentration from the TKN concentration.

Phosphorus

Phosphorus is another of the primary plant nutrients. The most common use is as a fertilizer, although some pesticides are phosphorus based. Most phosphorus is tightly bound to the soil particle with only a small amount (ortho-phosphate) dissolving in water. When high erosion occurs on farms, the bound phosphorus particles are washed away with the soil. It is not uncommon to note an increase in phosphorus concentrations when the suspended sediment concentrations increase. Two major forms of phosphorus were monitored during the study. These were total phosphorus and dissolved ortho-phosphate. Dissolved ortho-phosphate is that fraction of phosphorus which is available for plant uptake.

Bacteria

Two bacterial parameters were sampled during the study. The first, fecal coliform, is found in the intestines of warm blooded animals and is used as an indicator of fecal contamination of the water. Streptococcus, the second, is indicative of livestock contamination. Both analyses are reported in terms of number of colonies per 100ml of sample. A ratio of the fecal coliform to streptococcus colonies can be used to determine the source of the contamination (Clark 1985, 1986).

RESULTS AND DISCUSSION

FLOW

During the sampling period Milk Creek flowed into the Teton River on only two sampling dates. On both occasions, flow into the Teton River was less than 3 cfs. Flows along Milk Creek were typical of a loosing stream; flows were greatest at the higher elevations and less at lower elevations (Table 4). Due to low flows in Milk Creek, flows were not taken on the Teton River. The U.S. Geological Survey maintained a crest-survey station on Milk Creek near the mouth from 1962 to 1980. Data from this station indicate the flows were a record low during our study (Table 5).

SUSPENDED SEDIMENT

Suspended sediment samples were not taken until June 11, 1986. Previous to this date, total residue was sampled. Only two samples were analyzed for both suspended sediments and total residue. Using these two data points, we have tried to get a ratio of suspended sediments to total residue. The ratios were 0.244 for the Teton River above Milk Creek on June 11, and 0.216 for Milk Creek at Mid-Echo Road on June 25. The mean of these two figures is 0.230. Multiplying the total residue data by this mean allows us to estimate the suspended sediment concentration (Appendix).

At no time did the suspended sediment concentration reach 200 mg/l. With the low flows into the Teton River from Milk Creek, it is apparent there was no significant loading. Using the formula

$$\text{lbs./day} = \text{concentration (mg/l)} * \text{flow(cfs)} * 5.4$$

the heaviest suspended sediment load from Milk Creek into the Teton River was less than 20 lbs./day (Table 6).

NUTRIENTS

Nitrogen

Nitrates, nitrites, and ammonia are considered inorganic nitrogen compounds. A concentration of total inorganic nitrogen of 0.3 mg/l is the recommended limit for the prevention of nuisance aquatic vegetation (Mackenthun, 1973). These recommendations were exceeded twice in the

Table 4. Milk Creek Flows (cfs)

Date	Station ID# [1] A	B	C	D	E	F	G	H
April 29	ND	ND	ND	ND	ND	0.5	ND	ND
May 14	ND	ND	NF	NF	NF	1.0	1.9	5.7
May 28	ND	ND	ND	2.8	4.0	6.0	14.1	26.5
June 11	ND	ND	<0.2	<0.5	0.6	1.8	4.6	6.7
June 25	ND	ND	NF	NF	NF	0.3	1.4	2.2
July 10	ND	ND	NF	NF	NF	NF	0.8	1.3

1) Station ID# Please refer to Table 2, page 6.

NF= No Flow

ND= No Data

Table 5. USGS Gage Data for Milk Creek

STATION 13054400 MILK CREEK NEAR TETONIA, IDAHO

AGENCY: USGS STATE: IDAHO COUNTY: TETON DISTRICT: TETON

STATION LAT. 435300 LOCATOR LONG. 1112040

DRAINAGE AREA: = 17.9 Sq. Mi. GAGE DATUM = 6000 ft.

WATER YEAR	ANNUAL PEAK DISCHARGE (CFS)	DATE	CODES	HIGHEST SINCE	GAGE HEIGHT OF ANNUAL PEAK, FT.
1962	179	2/11/62			7.72
1963	1,350	2/1/63			9.13
1964	6	5/12/64	Est.		
1965	124	4/1/65			6.02
1966	30	3/28/66			
1967	15	3/19/67			2.17
1968	116	4/3/68			5.90
1969	164	4/2/69			6.71
1970	56	5/5/70			4.40
1971	870	8/12/71			8.70
1972	48	6/24/72			4.04
1973	168	4/24/73			6.69
1974	50	8/3/74			4.12
1975	260	6/19/75			7.80
1976	87	4/12/76			5.24
1977	69	7/24/77			4.81
1978	115	7/20/78			5.86
1979	25	7/23/79			2.83
1980	18	5/25/80			2.21

Table courtesy of the United States Geological Survey

Table 6. Milk Creek Suspended Sediment Load (lbs./day)[1]

	Station ID# [2]					
Date	C	D	E	F	G	H
April 29	ND	ND	ND	17.5	ND	ND
May 14	NF	NF	NF	54.6	103	155
May 28	262	911	2050	2600	946	2500
June 11	1	27	39	117	348	217
June 25	NF	NF	NF	49	121	356
July 10	NF	NF	NF	NF	17	14

1) lbs./day= concentration (mg/l) * flow (cfs)* 5.4

2) Refer to Table 2, page 6.

Suspended sediment (mg/l)= Total Residue (mg/l) * 0.23

NF= No Flow

ND= No Data

Teton River, but at no time were they exceeded in the Milk Creek drainage (Appendix).

Ammonia standards were not exceeded at any time at any station (Idaho Department of Health and Welfare, 1987). Ammonia rapidly converts to nitrates and nitrites under natural conditions. Because of this, anhydrous (without water) ammonia is used as a fertilizer. Other sources of ammonia include animal wastes. Ammonia is the result of the breakdown of complex nitrogen based compounds under anaerobic conditions. Ammonia is highly toxic to many aquatic organisms in high concentrations.

Natural (unpolluted) waters exhibit TKN values between 0.05 and 2.0 mg/l (USGS, 1977). None of the samples analyzed had a concentration greater than 1.9 mg/l.

Phosphorus

Total phosphorus concentrations exceeded the recommended criteria of 0.1 mg/l (Mackenthun, 1973) on 6 occasions (n=21). Both times Milk Creek reached the Teton River, the recommended standard was exceeded in Milk Creek, but the much larger flow of the Teton River diluted the phosphorus to below the recommended limit.

Dissolved ortho-phosphate concentrations increased when the total phosphorus concentrations increased. The recommended limit of 0.025 mg/l (Mackenthun, 1973) was exceeded in 13 of the 21 samples. The much greater flows of the Teton River diluted the ortho-phosphate when Milk Creek reached the river.

BACTERIA

The Teton River is protected for primary contact recreation (Idaho Department of Health and Welfare, 1987). Under the bacteria standards,the fecal bacteria count shall not exceed 500 colonies per 100 ml at any one time. Although the fecal standard was exceeded 6 times in Milk Creek, only once did the creek reach the Teton River with excessive counts (Appendix). The time it did reach the Teton River with excessive counts, the flow of Milk Creek was less than 0.2 cfs, and the bacteria load was diluted by the Teton River.

Fecal coliform- Streptococcus ratios (Table 7) show the main contributer as livestock. Only once was a human/livestock mix indicated.

CONCLUSIONS AND RECOMMENDATIONS

Milk Creek flowed into the Teton River on only two of the sample dates due to drought conditions. The flow in Milk Creek was insignificant compared to the flow in the Teton River. The suspended sediment, nutrients, bacteria, and other contaminants Milk Creek carried were generally comparable to the flow. Therefore, it is unlikely Milk Creek had a negative impact on the Teton River on those days it actually reached the river. However, it is also likely that if Milk Creek had carried a more normal flow into the river, the impacts could have been significant.

Sample results did show high counts of fecal coliform and streptococcus contamination at certain times. The fecal coliform/streptococcus ratio indicates that the contamination is from animal wastes. High counts were noted from the forest boundary station as well as at the lower elevations. Therefore, bacterial contamination is apparently not primarily from private lands.

Due to the sparsity of data because of the low water year, it is suggested that a further study be done on a more "normal" water year.

Table 7. Milk Creek Fecal Coliform- Streptococcus Ratios

	Station ID#[1]							
Date	A	B	C	D	E	F	G	H
April 29	ND	ND	ND	ND	ND	Small[2]	ND	ND
May 14	Small	ND	NF	NF	NF	0.22	Small	0.11
May 28	ND	ND	ND	0.36	0.06	0.01	0.03	0.07
June 11	ND	0.28	0.03	0.42	Small	0.09	0.06	Small
June 25	ND	ND	NF	NF	NF	0.21	0.70	3.18
July 10	Large	ND	NF	NF	NF	NF	0.08	0.59

1) Refer to Table 2, page 6.

2) Small means the fecal coliform count is <10

Large means the streptococcus count is <10.

ND= No Data

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APPENDIX

STORET RETRIEVAL DATE 86/03/04 PGM=ALLPARM PAGE:

/TYPA/AMBNT/STREAM

2080474
43 55 43.0 111 23 00.0 2
TETON R @ MOUTH OF MILK CR
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211CSURV 860614 HU 17040204019 0004.790 UF
0000 FEET DEPTH

	INITIAL DATE				86/05/28	86/06/11
	MEDIUM				WATER	WATER
00076	TURB	TRBIDMTR	JACK FTU		11.0	10.0
00095	CNDUCTVY	AT 25C	MICROMHO		183	251
00116	TRANSPE	SURVEY	IDENT		861602	861602
00530	RESIDUE	TOT NFLT	MG/L		48.00	131.00
00610	NH3+NH4-	N TOTAL	MG/L			.0300
00615	NO2-N	TOTAL	MG/L			.0040
00620	NO3-N	TOTAL	MG/L			.1410
00625	TOT KJEL	N	MG/L			.250
00665	PHOS-TOT		MG/L	P		.100K
00669	PHOS-DIS	HYDRO	MG/L	P		.039
31616	FEC COLI	MFM-FCBR	/100ML			50
31679	FECSTREP	MF M-ENT	/100ML			180
70300	RESIDUE	DISS-180	C	MG/L	122	
70507	PHOS-T	ORTHO	MG/L	P		.003
74041	WQF	SAMPLE	UPDATED		860908	860908
80154	SUSP SED	CONC	MG/L			32.000
82028	RATIO	FEC COL	FEC STRP			.55

STORET RETRIEVAL DATE 88/03/04 PGM=ALLPARM PAGE

2080475
43 55 58.0 111 23 13.0 2
IFPCN R BL MOUTH OF MILK CR
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
2110SURV 860614 HQ 17040204019 0004.54
0000 FEET DEPTH

/TYPA/AMBNT/STREAM

	INITIAL DATE			86/05/14	86/05/28	86/07/10
	MEDIUM			WATER	WATER	WATER
00076	TURB	TRBIDMTR	HACH FTU	4.5	18.0	2.0
00095	CNDUCTVY	AT 25C	MICROMHO	301	188	331
00116	INTNSVE	SURVEY	IDENT	861602	861602	861602
00530	RESIDUE	TOT NFLT	MG/L	40.00	128.00	
00610	NH3+NH4-	N TOTAL	MG/L	.0580		.0300
00615	NO2-N	TOTAL	MG/L	.0030		.0040
00620	NO3-N	TOTAL	MG/L	.5190		.4550
00625	TOT KJEL	N	MG/L	.580		.260
00665	PHOS-TOT		MG/L P	.030		.100K
00669	PHOS-TOT	HYDRO	MG/L P	.033		.001
01002	ARSENIC	AS,TOT	UG/L			10K
01022	BORON	B,TOT	UG/L			89
01027	CADMIUM	CD,TOT	UG/L			1K
01034	CHROMIUM	CR,TOT	UG/L			50K
01042	COPPER	CU,TOT	UG/L			10K
01045	IRON	FE,TOT	UG/L			60
01051	LEAD	PB,TOT	UG/L			50K
01055	MANGNESE	MN	UG/L			10.0
01067	NICKEL	NI,TOTAL	UG/L			50K
01077	SILVER	AG,TOT	UG/L			1.0K
01092	ZINC	ZN,TOT	UG/L			1K
31616	FEC COLI	MFM-FCBR	/100ML	10K		20
31679	FECSTREP	MF M-ENT	/100ML	10K		10K
70300	RESIDUE	DISS-180	C MG/L	185	130	166
70507	PHOS-T	ORTHO	MG/L P	.013		.003
71900	MERCURY	HG,TOTAL	UG/L			.50K
74041	WQF	SAMPLE	UPDATED	860908	860908	860807
80154	SUSP SED	CONC	MG/L			.200K
82028	RATIO	FEC COL	FEC STRP	1$		2$

2080476
43 55 17.0 111 22 45.0 2
MOUTH OF MILK CR
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211DSURV 860614 HQ 17040204020 0000.490 OFF
0000 FEET DEPTH

(TYPA/AMBNT/STREAM

	INITIAL DATE			86/05/28	86/06/11
	MEDIUM			WATER	WATER
00061	STREAM	FLOW,	INST-CFS		.2000K
00076	TURB	TRBIDMTR	HACH FTU	56.0	25.0
00095	CNDUCTVY	AT 25C	MICROMHO	126	158
00116	INTNSVE	SURVEY	IDENT	861602	861602
00530	RESIDUE	TOT NFLT	MG/L	88.00	
00610	NH3+NH4-	N TOTAL	MG/L		.0480
00615	NO2-N	TOTAL	MG/L		.0160
00620	NO3-N	TOTAL	MG/L		.0030
00625	TOT KJEL	N	MG/L		.450
00665	PHOS-TOT		MG/L P		.200
00669	PHOS-TOT	HYDRO	MG/L P		.071
31616	FEC COLI	MFM-FCBR	/100ML		20
31679	FECSTREP	MF M-ENT	/100ML		150
70300	RESIDUE	DISS-180	C MG/L	187	144
70507	PHOS-T	ORTHO	MG/L P		.109
74041	WQF	SAMPLE	UPDATED	860908	860908
80154	SUSP SED	CONC	MG/L		10.000
82028	RATIO	FEC COL	FEC STRP		.03$

2080477
43 52 43.0 111 19 51.0 2
MILK CR @ HINK-INC
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211DSURV 860614 HG 17040204020 0005.290 OFF
0000 FEET DEPTH

YPA/AMBNT/STREAM

	INITIAL DATE			86/05/28	86/06/11
	MEDIUM			WATER	WATER
00061	STREAM	FLOW,	INST-CFS	2.8000	.5000K
00076	TURB	TRBIDMTR	HACH FTU	90.0	18.0
00095	CNDUCTVY	AT 25C	MICROMHO	91	128
00116	INTRSVE	SURVEY	TOENT	861602	861602
00530	RESIDUE	TOT NFLT	MG/L	262.00	
00610	NH3+NH4-	N TOTAL	MG/L	.0350	.0390
00615	NO2-N	TOTAL	MG/L	.0410	.0150
00620	NO3-N	TOTAL	MG/L	.0010K	.0010
00625	TOT KJEL	N	MG/L	1.420	.310
00665	PHOS-TOT		MG/L P	.700	.100
00669	PHOS-TOT	HYDRO	MG/L P	.229	.060
31616	FEC COLI	MFM-FCBR	/100ML	2400	630
31679	FECSTREP	MF M-ENT	/100ML	6700	1500
70300	RESIDUE	DISS-180	C MG/L	150	95
70507	PHOS-T	ORTHO	MG/L P	.103	.051
74041	WQF	SAMPLE	UPDATED	860908	860908
80154	SUSP SED	CONC	MG/L		10.000
82028	RATIO	FEC COL	FEC STRP	.4$	.4$

20804/8
43 52 00.0 111 17 54.0 2
MILK CR d FAMILY DUMP
16OF1 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211DSURV 860614 HG 17040204020 000/.390 UFF
0000 FEET DEPTH

TYPA/AMBNT/STREAM

	INITIAL DATE			86/05/28	86/06/11
	MEDIUM			WATER	WATER
00061	STREAM	FLOW,	INST-CFS	4.0000	.6000
00076	TURB	TRBIDMTR	HACH FTU	110.0	20.0
00095	CNDUCTVY	AT 25C	MICROMHO	73	71
00116	INTNSVE	SURVEY	IDFNT	861602	861602
00530	RESIDUE	TOT NFLT	MG/L	412.00	
00610	NH3+NH4-	N TOTAL	MG/L	.0790	.0260
00615	NO2-N	TOTAL	MG/L	.0320	.0150
00620	NO3-N	TOTAL	MG/L	.0010K	.0010K
00625	TOT KJEL	N	MG/L	1.870	.310
00665	PHOS-TOT		MG/L P	.800	.100
00669	PHOS-TOT	HYDRO	MG/L P	.370	.060
31616	FEC COLI	MFM-FCBR	/100ML	140	50
31679	FECSTREP	MF M-ENT	/100ML	2400	20000
70300	RESIDUE	DISS-180	C MG/L	124	78
70507	PHOS-T	ORTHO	MG/L P	.120	.050
74041	WQF	SAMPLE	UPDATED	860908	860908
80154	SUSP SED	CONC	MG/L		12.000
8202B	RATIO	FEC COL	FEC STRP	.06+	.003+

A/AMBNT/STREAM

2080479
43 50 25.0 111 17 19.0 2
MILK CK @ ECHO RD/HWY
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 860614 HG 17040204020 0009.770 OFF
0000 FEET DEPTH

INITIAL DATE				86/04/29	86/05/14	86/05/28	86/06/11	86/06/25
MEDIUM				WATER	WATER	WATER	WATER	WATER
061	STREAM	FLOW,	INST-CFS	.5000	1.0000	6.0000	1.8000	.3000
076	TURB	TURBIDITY	HACH FTU	36.0	23.0	75.0	14.0	20.0
095	CNDUCTVY	AT 25C	MICROMHO	75	58	57	63	79
116	INTNSVE	SURVEY	IDENT	861602	861602	861602	861602	861602
530	RESIDUE	TOT NFLT	MG/L	28.20	44.00	350.00		
610	NH3+NH4-	N TOTAL	MG/L	.1440	.0950	.0530	.0350	.0030
615	NO2-N	TOTAL	MG/L	.0450	.0170	.0240	.0120	.0210
620	NO3-N	TOTAL	MG/L	.0810	.0690	.0060	.0040	.0100
625	TOT KJEL	N	MG/L	.680	.410	1.330	.230	.410
665	PHOS-TOT		MG/L P	.200	.100	.500	.100	.100
669	PHOS-TOT	HYDRO	MG/L P	.060	.025	.090	.033	.129
002	ARSENIC	AS,TOT	UG/L	10K				10K
027	CADMIUM	CD,TOT	UG/L	1K				1K
034	CHROMIUM	CR,TOT	UG/L	50K				50K
042	COPPER	CU,TOT	UG/L	10K				10K
045	IRON	FE,TOT	UG/L					1510
051	LEAD	PB,TOT	UG/L	50K				50K
055	MANGNESE	MN	UG/L	30.0				50.0
067	NICKEL	NI,TOTAL	UG/L	50K				50K
077	SILVER	AG,TOT	UG/L	1.0K				1.0K
092	ZINC	ZN,TOT	UG/L	8				10
616	FEC COLI	MFM-FCBR	/100ML	10K	20	10	60	2200
619	FECSTREP	MF M-ENT	/100ML	1100	90	720	690	10500
300	RESIDUE	DISS-180	C MG/L	129	127	109	70	100
507	PHOS-T	ORTHO	MG/L P	.112	.093	.078	.028	.060
900	MERCURY	HG,TOTAL	UG/L	.50K				.50K
041	WQF	SAMPLE	UPDATED	860908	860908	860908	860908	861010
154	SUSP SED	CONC	MG/L				12.000	30.000
028	RATIO	FEC COL	FEC STRP	.009%	.2%	.01%	.09%	.2%

ICKET RETRIEVAL DATE 88/03/04 PGM=ALLPARM PAGE:

TYPA/AMBNT/STREAM

20800480
43 48 47.0 111 18 55.0 2
MILK CR @ MID ECHO RD
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211DSURV 860614 HG 17040204020 0012.760 OFF
0000 FEET DEPTH

INITIAL DATE			86/05/14	86/05/28	86/06/11	86/06/25	86/07/10
MEDIUM			WATER	WATER	WATER	WATER	WATER
00061 STREAM	FLOW,	INST-CFS	1.9000	14.1000	4.6000	1.4000	.8000
00076 TURB	TRBIDMTR	HACH FTU	24.0	24.0	13.0	12.0	9.0
00095 CNDUCTVY	AT 25C	MICROMHO	72	58	63	79	83
00116 INTNSVE	SURVEY	TDENT	861602	861602	861602	861602	861602
00530 RESIDUE	TOT NFLT	MG/L	44.00	54.00		74.00	
00610 NH3+NH4-	N TOTAL	MG/L	.1180	.0670	.0260	.0030K	.0150
00615 NO2-N	TOTAL	MG/L	.0140	.0180	.0120	.0020	.0070
00620 NO3-N	TOTAL	MG/L	.0640	.0030	.0160	.0110	.0220
00625 TOT KJEL	N	MG/L	.440	.500	.200	.200	.230
00665 PHOS-TOT		MG/L P	.140	.100	.100	.100	.100K
00669 PHOS-TOT	HYDRO	MG/L P	.025	.087	.023	.052	.015
31616 FEC COLI	MFM-FCBR	/100ML	10K	10	10	660	30
31679 FECSTREP	MF M-ENT	/100ML	280	380	160	940	340
70300 RESIDUE	DISS-180	C MG/L	122	92	70		78
70507 PHOS-T	ORTHO	MG/L P	.085	.034	.023	.022	.016
74041 HOF	SAMPLE	UPDATED	860908	861010	860908	860807	861010
80154 SUSP SED	CONC	MG/L			14.000	16.000	4.000
82028 RATIO	FEC COL	FEC STRP	.04%	.03%	.06%	.7%	.09%

IGRET RETRIEVAL DATE 86/03/04 PGM=ALLPARM PAGE:

2080481
43 53 56.0 111 21 32.0 2
MILK CR @ FOREST SERVICE
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
TYPA/AMBNT/STREAM 211DSURV 860614 HG 17040204020 0002.770 OFF
0000 FEET DEPTH

INITIAL DATE			86/05/14	86/05/28	86/06/11	86/06/25	86/07/10
MEDIUM			WATER	WATER	WATER	WATER	WATER
00061 STREAM	FLOW,	INST-CFS	5.7000	26.5000	6.7000	2.2000	1.3000
00076 TURB	TRBIDMTR	HACH FTU	22.0	22.0	11.0	10.0	8.0
00095 CNDUCTVY	AT 25C	MICROMHO	82	49	58	120	78
00116 INTNSVE	SURVEY	IDENT	861602	861602	861602	861602	861602
00410 T ALK	CACO3	MG/L	25.0000			23.0000	
00425 HCO3 ALK	CACO3	MG/L	25				
00430 CO3 ALK	CACO3	MG/L	1K				
00530 RESIDUE	TOT NFLT	MG/L	22.00	76.00			
00610 NH3+NH4-	N TOTAL	MG/L	.1180	.0510	.0350	.0030K	.0080
00615 NO2-N	TOTAL	MG/L	.0130	.0140	.0070	.0080	.0050
00620 NO3-N	TOTAL	MG/L	.1610	.0010K	.0030	.0030K	.0040
00625 TOT KJEL	N	MG/L	.260	.460	.120	.220	.220
00665 PHOS-TOT		MG/L P	.050	.100	.100K	.100K	.100K
00669 PHOS-TOT	HYDRO	MG/L P	.001K	.059	.008	.056	.018
00900 TOT HARD	CACO3	MG/L	16			12	
00916 CALCIUM	CA-TOT	MG/L	4.0				
00927 MGNSIUM	MG,TOT	MG/L	1.6				
00929 SODIUM	NA,TOT	MG/L	2.80				
00937 PTSSIUM	K,TOT	MG/L	1.60				
00940 CHLORIDE	TOTAL	MG/L	4.5000				
00945 SULFATE	SO4-TOT	MG/L	11.00			8.39	
00951 FLUORIDE	F,TOTAL	MG/L	.13			.09	
00956 SILICA	TOTAL	MG/L	23.40				
01002 ARSENIC	AS,TOT	UG/L				10K	
01027 CADMIUM	CD,TOT	UG/L				1K	
01034 CHROMIUM	CR,TOT	UG/L				50K	
01042 COPPER	CU,TOT	UG/L				10K	
01045 IRON	FE,TOT	UG/L				920	
01051 LEAD	PB,TOT	UG/L				50K	
01055 MANGNESE	MN	UG/L				20.0	
01067 NICKEL	NI,TOTAL	UG/L				50	
01077 SILVER	AG,TOT	UG/L				1.0K	
01092 ZINC	ZN,TOT	UG/L				4	
31616 FEC COLI	MFM-FCBK	/100ML	10	10	10K	2100	2000
31679 FECSTREP	MF M-ENT	/100ML	90	140	20	660	3400
70300 RESIDUE	DISS-180 C	MG/L	111	86	67	85	72

(SAMPLE CONTINUED ON NEXT PAGE)

2080481
43 53 56.0 111 21 52.0 2
MILK CK @ FOREST SERVICE
16081 IDAHO TETON
PACIFIC NORTHWEST 130600
TYPA/AMBNT/STREAM UPPER SNAKE RIVER
211DSURV 860614 HU 17040204020 0002.770 OFF
0000 FEET DEPTH

SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			86/05/14	86/05/28	86/06/11	86/06/25	86/07/10
	MEDIUM			WATER	WATER	WATER	WATER	WATER
70507	PHOS-T	ORTHO	MG/L P	.006	.024	.022	.022	.012
71900	MERCURY	HG,TOTAL	UG/L				.50K	
74041	WQF	SAMPLE	UPDATED	860908	860908	860908	860807	860807
80154	SUSP SED	CONC	MG/L			6.000	30.000	2.000
82028	RATIO	FEC COL	FEC STRP	.1$	.07$	.5$	$	.6$