WATER QUALITY STATUS REPORT

THREEMILE CREEK
(Idaho County)

1976-1977

Department of Health and Welfare
Division of Environment
Boise, Idaho

March 1979

Report No. WQ-41

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(Idaho County)

1976-1977

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March 1979

Department of Health and Welfare
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ABSTRACT

A survey was conducted on Threemile Creek, Idaho County, to assess the effect of the Grangeville sewage treatment plant on water quality with samples taken during high and low flow conditions. Low flow samples were collected on November 17-18, 1976, and high flow samples were collected on June 7-8, 1977.

Total coliform and fecal coliform bacterial concentrations exceeded Idaho water quality standards for Class A streams. Nutrients and ammonia were also very high in concentration. Nitrate-nitrogen averaged 4.35 mg/l, total phosphorus averaged 2.47 mg/l and ammonia averaged 0.71 mg/l. Samples containing at least 7000 total coliform per 100 ml and 500 fecal coliform per 100 ml were collected at virtually every station.

The sewage treatment plant degraded water quality with respect to nutrients, ammonia, and dissolved and suspended solids. Nonpoint sources were the major contributor of bacterial pollution. These include erosion of silts from dryland farms, livestock feeding and grazing, urban runoff, and failure of individual sewage disposal systems.

I. INTRODUCTION

A. Purpose

A survey was conducted on Threemile Creek to assess the effect of the City of Grangeville sewage treatment plant discharge on the stream and to acquire sufficient data to develop effluent limitations for the discharge as required for an NPDES permit. A secondary purpose was to determine if Threemile Creek met requirements for Class A waters listed in Idaho's Water Quality Standards and Wastewater Treatment Requirements. The study plan is included in Appendix A.

B. Background and Drainage Description

Threemile Creek is located in Idaho County, originating a few miles south of, and flowing through, Grangeville, Idaho (RM 12). It empties into the Clearwater River (RM 82) approximately 7 miles south of Kamiah, Idaho (Figure 1).

The upper reaches of Threemile Creek flow through dryland farming and livestock grazing areas. As the stream passes through the City of Grangeville it is impacted by storm drainage, domestic stock-holding areas and failing individual and subsurface sewage disposal systems. Additional dryland farms are situated along the stream for approximately 4 miles north of Grangeville before it enters relatively undeveloped, steep-sloped breaks 8 river miles from the South Fork of the Clearwater River.

Threemile Creek near Grangeville is a nearly intermittent stream. During spring runoff flows are estimated at approximately 15 cfs. Late summer flows rarely exceed one cfs. The Grangeville sewage treatment plant contributes an average flow of 0.60 cfs with the monthly average ranging from 0.5 to 0.9 cfs (1978 data).

II. MATERIALS AND METHODS

A. Survey Stations and Sampling Frequency

Five sampling stations were located along the upland portion of Threemile Creek at the following locations (Figure 1):

Station Number	STORET Number	Longitude	Latitude
1	2020092	116°06'50"	45°53'45"
2	2020088	116°06'50"	45°56'25"
3	2020089	116°06'40"	45°56'30"
4	2020090	116°05'55"	45°57'10"
5	2020091	116°04'50"	45°58'45"

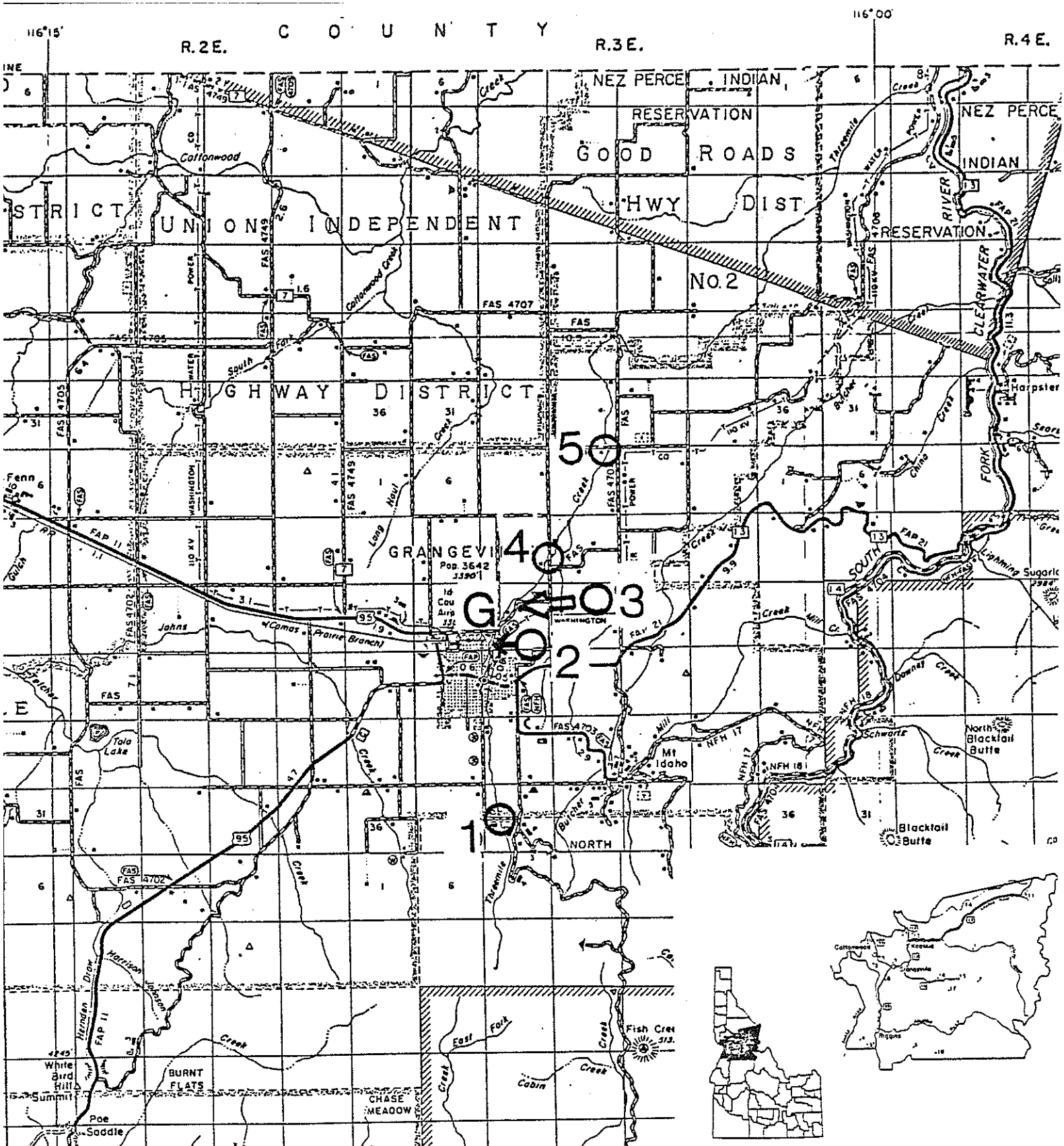

FIGURE 1: Locations of sampli stations on Threemi Creek, Idaho County Idaho.

O Sampling Stations

G Grangeville STP Discharge

The Grangeville sewage treatment plant (STP) (ID-002003-6) influent and effluent were also sampled.

Samples were collected during high and low flow conditions over a 24-hour period. A maximum of five samples at each station were collected in this time period and analyzed separately. Low flow samples were collected on November 17 and 18, 1976; high flow samples were collected June 7 and 8, 1977.

B. Parameter List

Field and laboratory analyses were as follows:

Field:

Flow	Temperature
pH	Dissolved Oxygen

Laboratory:

pH	Fecal Streptococcal Bacteria
Biochemical Oxygen Demand (1976 only)	Turbidity
Chemical Oxygen Demand (1976 only)	Specific Conductance
Nitrate-N	Hardness
Nitrite-N	Alkalinity
Ammonia	Iron
Total Kjeldahl Nitrogen	Manganese
Total Phosphorus	Sodium
Total Inorganic Phosphorus	Potassium
Ortho Phosphate-P	Chloride
Total Solids	Cadmium (Metals collected in 1977 only)
Volatile Solids	Copper
Suspended Solids	Lead
Volatile Suspended Solids	Zinc
Total Coliform Bacteria	Mercury
Fecal Coliform Bacteria	

Temperature and dissolved oxygen were measured in the field with a Yellow Springs Instruments Dissolved Oxygen Meter, Model 55A. Field pH was measured with an Orion pH Meter, Model 404. Flows were estimated by depth measurements of water in corrugated culverts.

Bacteriological samples for laboratory analysis were collected in 250 ml polyethylene bottles containing 0.2 ml sodium thiosulfate. Chemical samples were collected in approximately 1 liter cubitainers. Samples for nutrients were preserved with sulfuric acid, and samples for metals were preserved with nitric acid. Samples for minerals and solids were cooled to 4°C according to Idaho Department of Health and Welfare, Division of Environment, Technical Procedures Manual. Laboratory analyses were performed according to Standard Methods for the Examination of Water and Wastewater.

III. WASTE SOURCES

Point Sources

1) City of Grangeville Sewage Treatment Plant ID-002003-6 (Figure 1)

The City of Grangeville operates a municipal sewage treatment plant. The discharge from this plant consists of sewage effluent which has undergone secondary treatment. The average monthly flow is 0.60 cfs.

Nonpoint Sources

The upper reaches of Threemile Creek are subject to sediment erosion from dryland farming. Cattle and horses are grazed along the stream and its tributaries in the vicinity of the City of Grangeville. Rural housing along Threemile Creek utilizes individual lagoons or septic tank-drainfield systems which may be a source of bacteria and nutrients.

IV. SURVEY RESULTS AND DISCUSSION

Idaho Water Quality Standards and Wastewater Treatment Requirements include specific instream standards for total and fecal coliform bacteria, pH, and dissolved oxygen. The other parameter categories fall into the "General Water Quality Standards" section and are evaluated according to EPA Quality Criteria for Water and other sources. Rationale for the criteria used are listed in Appendix D. Raw data, means and variances are listed in STORET printouts in Appendix B. Figures of parameter versus river mile are shown in Appendix C. Selected parameters for the Grangeville STP effluent are in Table 1.

Temperature

The discharge from the Grangeville STP had no measurable effect on the temperature of the stream under conditions of high flow. However, a significant temperature increase was recorded in Threemile Creek below the discharge during the low flow sampling period which was evident for over a mile downstream. It appears that normal water temperatures exceed 20°C throughout the summer beginning in June.

Dissolved Oxygen

A slight reduction in the dissolved oxygen concentration apparently occurs as a result of the discharge. However, the data are highly variable. Biochemical Oxygen Demand (BOD) data are available only from November, 1976. Substantial increases in BOD occurred downstream of the discharge (Figure 2).

TABLE 1: Grangeville STP Effluent Chemical Analysis

DATE FROM TO	TIME OF DAY	DEPTH FEET	DO PROBE MG/L	COD LOWLEVEL MG/L	TOT COLI /100 ML	FECAL COLI /100 ML	BOD_5 MG/L	NH_3-N TOTAL MG/L	NO_2-N TOTAL MG/L	NO_3-N TOTAL MG/L	TOT KJEL N MG/L	PHOS-TOT MG/L P	CNDUCTVY AT 250 MICROMHO	RESIDUE TOT NFLT MG/L	TURB JKSN JTU
76/11/17	11 00		8.3	--	>80,000	2,800	21	4.520	1.400	13.600	9.460	7.400	429	27	16.0
	17 00		7.4	--	>80,000	45,000	25	4.620	1.270	15.500	10.100	10.000	519	18	5.3
	22 00		7.5	--	>80,000	57,000	34	3.820	1.210	8.730	8.160	9.900	498	18	12.0
76/11/18	04 00		6.8	--	>80,000	36,000	30	2.280	0.956	16.900	6.120	9.800	479	9	22.0
	11 00		--	--	--	--	19	3.860	0.598	14.000	--	7.400	471	44	17.0
77/06/07	11 00		4.1	86	300,000	20,000	--	5.360	0.454	13.900	12.000	8.000	654	71	27.0
	17 00		6.4	146	16,000	20	--	2.210	0.376	20.400	7.400	10.500	592	58	32.0
	23 00		3.4	404	>80,000	>6,000	--	1.420	0.208	15.700	5.800	9.500	518	56	25.0
77/06/08	05 00		5.4	146	--	--	--	0.865	0.023	2.020	6.700	8.100	497	53	27.0
	11 00		--	--	--	--	--	1.960	0.304	16.200	10.800	8.600	518	67	26.0

pH

The discharge from the Grangeville STP had no demonstrable effect on the receiving waters. pH remained within the range of 6.7-7.7 in Threemile Creek below the discharge.

Bacteria

The Grangeville STP had no noticeable effect on total or fecal coliform bacterial densities. On some dates, addition of the STP effluent with high bacteria concentrations resulted in a reduced concentration in the receiving stream. This is due to the high chlorine residual below the outfall. No portion of the stream met Class A standards for coliform bacteria. Samples contained at least 7000 total coliform per 100 ml and 500 fecal coliform per 100 ml at every sampling station. Nonpoint sources obviously have a major impact on bacterial pollution in this segment of Threemile Creek.

Trophic

Large increases in the nitrogen and phosphorus concentrations were observed as a result of the discharge (Figures 3 and 4). Under low flow conditions the increases were most pronounced. Nitrate nitrogen and total phosphorus were well above the recommended maximum limits (0.30 mg/l-N., 0.05 mg/l-P) three miles downstream of the effluent discharge (Figures 4 and 5). These limits were also exceeded for both nitrogen and phosphorus during periods of high flow.

Aesthetic

Turbidity - Turbidity is normally high (approximately 10 JTU) during periods of high flow, due to erosion from dryland farming and increased urban runoff. However, during low flow conditions the Grangeville STP caused the increase in turbidity (Figure 6). Only two samples, one upstream and one downstream of the discharge, exceeded the 25 JTU recommended maximum criteria.

Solids

Total solids, suspended solids and dissolved solids (conductivity) all increased significantly as a result of the discharge. The inability of the stream to cope with the increase in solids is apparent from comparison of the values immediately downstream of the discharge with those three miles downstream (Figures 7, 8 and 9). Suspended solids and conductivity did not exceed the criteria established in EPA Quality Criteria for Water.

Inorganic Toxicity

Residual chlorine recorded at the station immediately below the STP averaged 0.37 mg/l over all sampling periods. The residual chlorine was still measurable three miles below the STP. These concentrations exceed the recommended maximum of 2 µg/l for toxicity to salmonid species (EPA Quality Criteria for Water). These high chlorine residuals are a result of inadequate chlorination equipment and the minor dilution afforded by Threemile Creek.

Total iron exceeded the recommended maximum for domestic water supplies (300 ug/l) at all locations and exceeded the recommended maximum of 1,000 ug/l for fresh water aquatic life on several occasions. Manganese also regularly exceeded the maximum recommended concentration of 50 ug/l for domestic water supplies. Other heavy metals were not measured regularly during this survey.

Organic Toxicity

Ammonia - Total ammonia concentrations increased significantly below the Grangeville discharge (Figure 10). During high flows total ammonia decreased back to concentrations measured above the STP three miles downstream. During low flows in November total ammonia still averaged 0.9 mg/l at the station three miles below the STP.

The ionized and unionized forms of ammonia exist in equilibrium in water in a relationship which is dependent on pH and temperature. Unionized ammonia, the toxic form, increases in alkaline solutions and at high temperatures. Under typical summer conditions of temperature (20°C) and pH (7.0) in Threemile Creek total ammonia would have to exceed 5.1 mg/l to contain unionized ammonia at levels toxic to aquatic life (EPA Quality Criteria for Water). Only in one sample during this survey immediately below the STP did total ammonia approach the toxic level. Ammonia levels dropped to concentrations well below toxic levels three miles downstream from the STP.

V. PROTECTED USES

Threemile Creek is a nearly intermittent stream in the vicinity of the Grangeville STP. For this reason, primary contact recreation and cold water fisheries are not feasible uses in this section. In the lower segment of the creek, in the break lands, the stream may support a salmonid population and should be protected for fisheries. The entire stream should be protected for secondary contact recreation.

VI. CONCLUSIONS

1) Threemile Creek meets instream Idaho Water Quality Standards for pH. It also meets EPA Water Quality Criteria for Total Dissolved Solids.

2) Total and fecal coliform bacteria exceed standards for primary and secondary contact recreation throughout the year and in all portions of the stream.

3) Nitrogen and phosphorus concentrations exceed acceptable levels. These are a source of nutrients to the South Fork of the Clearwater River.

4) Because of high bacterial and nutrient concentrations, Threemile Creek should be classified as Water Quality Limiting. This stream does not meet Class A coliform bacteria standards for primary or secondary contact recreation due to nonpoint source pollution, and does not meet EPA Water Quality Criteria for nutrients due to the Grangeville STP.

5) Turbidity increases substantially during periods of high runoff. The major source of this turbidity appears to be eroded silts from dryland farms and domestic animal grazing along the stream. Urban runoff is thought to contribute significantly to the increased turbidity, also. These nonpoint sources as well as failing sewage disposal systems from individual homes are a significant factor in the degradation of Threemile Creek.

6) Ammonia concentrations in Threemile Creek are very high as a result of the discharge from the Grangeville STP. However unionized ammonia remained below concentrations which are toxic to aquatic life.

VII. RECOMMENDATIONS

Threemile Creek is classified as water quality limiting because of bacterial violations attributable to nonpoint sources. However, high nutrient loadings are the result of the STP discharge. The discharge also causes high ammonia levels in Threemile Creek. Therefore, the following recommendations are made:

1) Failing individual and subsurface sewage disposal systems should be upgraded to meet standards as presented in Idaho Rules and Regulations for Individual and Subsurface Sewage Disposal Systems.

2) Best Management Practices as identified in the Statewide 208 program should be implemented to reduce erosion from dryland farming and reduce pollutants from summer livestock grazing. The stream should be protected from winter livestock holding areas.

3) The Grangeville STP should be upgraded to reduce the organic load to the stream and maintain a high dissolved oxygen concentration. The chlorination procedure should be revised to maintain acceptable bacterial reductions without causing a toxic chlorine residual in Threemile Creek. Due to the nature of the stream in the vicinity of the discharge, nutrient and ammonia removal should not be required, but ammonia concentrations should not increase.

LITERATURE CITED

Idaho Department of Environmental and Community Services, June 1973. Water Quality Standards and Wastewater Treatment Requirements, 19 p., and Appendix.

Ralston, G. L., and Browne, M. L., November 1976. Technical Procedures Manual for Water Quality Monitoring, 95 p., and Appendices.

APHA, AWWA, WPCF, Fourteenth Edition, 1975. Standard Methods for the Examination of Water and Wastewater, 1193 p.

Environmental Protection Agency, United States, July 1976. Quality Criteria for Water, U.S. Government Printing Office 1977 0-222-904, 256 p.

Idaho Department of Health and Welfare, Division of Environment, February 1978. Rules and Regulations for Individual and Subsurface Sewage Disposal Systems, 23 p.

APPENDIX A

Final Draft of Study Plans

THREEMILE CREEK
(Idaho County)
STUDY PLAN

PURPOSE:

To acquire water quality data to classify the stream segment.

BACKGROUND:

The uses to be protected must be specified and a classification of water quality limiting or effluent limiting must be designated.

STUDY PERIOD:

Samples will be taken during conditions of low flow and high flow. Sampling for low flow conditions will commence in November, 1976.

SAMPLING STATIONS:

The stream will be sampled at five sites; two upstream sites and three downstream sites relative to the Grangeville Sewage Treatment Plant discharge.

FIELD AND LABORATORY ANALYSES:

Field: Flow, D.O., pH, temperature

Laboratory: pH, BOD, COD, nitrate, nitrite, total kjeldahl nitrogen, ammonia, total phosphorus, total inorganic phosphorus, orthophosphate, total solids, volatile solids, suspended solids, volatile suspended solids, total coliform bacteria, fecal coliform bacteria, fecal streptococcal bacteria, turbidity, specific conductance, hardness, alkalinity, iron, manganese, sodium, potassium, chloride, cadmium, copper, zinc, mercury.

MANPOWER REQUIREMENTS:

Two Environmental Quality Specialists for 2 man-days each in 1976 and two Environmental Quality Specialists for 2 man-days each in 1977 for field work. An additional 10 man-days will be required for report preparation. All 18 man-days should be expended in FY 77.

SPECIAL EQUIPMENT REQUIREMENTS:

None.

REPORT:

A stream segment report should be drafted by August, 1977.

APPENDIX B

Raw Data: STORET Retrieval and Inventory

STORET DATE 79/04/23

STATION #1

2020092
45 53 45.0 116 06 50.0 2
THREEMILE CR ABOVE GRANGEVILLE
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
21IDSURV 771214
0000 CLASS 00

/NTRTMT/AMBNT/SPRING/STREAM

INDEX 1310001 002740 01350 1360 0060
MILES 0324.30 0139.30 074.70 007.60 015.00

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	7	10.5857	45.3148	6.73163	.635916	2.54432	23.0000	5.00000	76/11/17	77/06/07
00061	STREAM	FLOW,	INST-CFS	2	4.89000	11.6162	3.40825	.696984	2.41000	7.30000	2.48000	76/11/17	77/06/07
00070	TURB	JKSN	JTU	4	6.30000	12.9267	3.59537	.570693	1.79768	9.80000	3.10000	76/11/17	77/06/07
00095	CNDUCTVY	AT 25C	MICROMHO	4	108.250	248.917	15.7771	.145747	7.88855	124.000	91.0000	76/11/17	77/06/07
00300	DO		MG/L	7	10.5000	1.25354	1.11962	.106630	.423175	11.3000	8.60000	76/11/17	77/06/07
00310	BOD	5 DAY	MG/L	2	2.00000	2.00000	1.41421	.707107	1.00000	3.00000	1.00000	76/11/17	76/11/17
00335	COD	LOWLEVEL	MG/L	2	73.0000	32.0000	5.65685	.077491	4.00000	77.0000	69.0000	77/06/07	77/06/07
00400	PH		SU	7	7.41428	.021525	.146714	.019788	.055453	7.70000	7.30000	76/11/17	77/06/07
00403	LAB	PH	SU	4	7.70000	.100047	.316302	.041078	.158151	8.00000	7.30000	76/11/17	77/06/07
00410	T ALK	CACO3	MG/L	4	51.2500	30.2500	5.50000	.107317	2.75000	56.0000	46.0000	76/11/17	77/06/07
00500	RESIDUE	TOTAL	MG/L	4	109.750	135.583	11.6440	.106096	5.82201	119.000	93.0000	76/11/17	77/06/07
00505	RESIDUE	TOT VOL	MG/L	4	26.0000	36.6667	6.05530	.232896	3.02765	32.0000	19.0000	76/11/17	77/06/07
00530	RESIDUE	TOT NFLT	MG/L	4	12.2500	261.583	16.1735	1.32029	8.08677	36.0000	2.00000	76/11/17	77/06/07
00535	RESIDUE	VOL NFLT	MG/L	4	2.00000	.000000	.000000		.000000	2.00000	2.00000	76/11/17	77/06/07
00610	NH3-N	TOTAL	MG/L	4	.011750	.000051	.007136	.607284	.003568	.020000	.003000	76/11/17	77/06/07
00615	NO2-N	TOTAL	MG/L	4	.002000	.000001	.001155	.577351	.000577	.003000	.001000	76/11/17	77/06/07
00620	NO3-N	TOTAL	MG/L	4	.010000	-.776E-10	.000000		.000000	.010000	.010000	76/11/17	77/06/07
00625	TOT KJEL	N	MG/L	4	.862500	.013226	.115002	.133336	.057501	1.00000	.730000	76/11/17	77/06/07
00665	PHOS-TOT		MG/L P	4	.160000	.000333	.018257	.114105	.009128	.180000	.140000	76/11/17	77/06/07
00669	PHOS-TOT	HYDRO	MG/L P	4	.132500	.000825	.028723	.216777	.014361	.170000	.110000	76/11/17	77/06/07
00900	TOT HARD	CACO3	MG/L	2	49.0000	2.00000	1.41421	.028861	1.00000	50.0000	48.0000	76/11/17	76/11/17
00929	SODIUM	NA,TOT	MG/L	4	2.90000	.053329	.230932	.079632	.115466	3.10000	2.70000	76/11/17	77/06/07
00937	POTSSIUM	K,TOT	MG/L	4	2.02500	.049174	.221752	.109507	.110876	2.30000	1.80000	76/11/17	77/06/07
00940	CHLORIDE	CL	MG/L	4	2.00000	.000000	.000000		.000000	2.00000	2.00000	76/11/17	77/06/07
01027	CADMIUM	CD,TOT	UG/L	1	5.00000					5.00000	5.00000	77/06/07	77/06/07
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	77/06/07	77/06/07
01045	IRON	FE,TOT	UG/L	4	927.500	1089425	1043.76	1.12534	521.877	2490.00	360.000	76/11/17	77/06/07
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	77/06/07	77/06/07
01055	MANGNESE	MN	UG/L	2	10.0000	.000000	.000000		.000000	10.0000	10.0000	76/11/17	76/11/17
01092	ZINC	ZN,TOT	UG/L	1	10.0000					10.0000	10.0000	77/06/07	77/06/07
31501	TOT COLI	MFIMENDO	/100ML	4	4850.00	2890000	1700.00	.350515	850.000	7200.00	3600.00	76/11/17	77/06/07
31616	FEC COLI	MFM-FCBR	/100ML	4	510.000	132400	363.868	.713467	181.934	900.000	200.000	76/11/17	77/06/07
31679	FECSTREP	MF M-ENT	/100ML	2	200.000	.000000	.000000		.000000	200.000	200.000	76/11/17	76/11/17
70507	PHOS-T	ORTHO	MG/L P	4	.068750	.000100	.009979	.145150	.004990	.081000	.058000	76/11/17	77/06/07
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	77/06/07	77/06/07

STORET RETRIEVAL DATE 79/04/28

2020092
45 53 45.0 116 06 50.0 2
THREEMILE CR ABOVE GRANGEVILLE
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
21IDSURV 771214
0000 FEET DEPTH CLASS 00

/NTRTMT/AMBNT/SPRING/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00403 LAB PH SU	31501 TOT COLI MFIMENDO /100ML	31616 FEC COLI MFM-FCBR /100ML	31679 FECSTREP MF M-ENT /100ML
76/11/17	11	00	8.3		11.1	1.0K		7.30	7.6	3600	200	200K
	17	00	7.2	2	11.2			7.40				
	22	00	6.6		10.8	3.0		7.40	7.3	3600	200K	200K
76/11/18	04	00	5.0		11.3			7.30				
	12	00	7.0		11.3			7.30				
77/06/07	11	00	17.0	7	9.2		77.0	7.70	8.0	5000	900	
	23	00	23.0		8.6		69.0	7.50	7.9	7200	740	

DATE FROM TO	TIME OF DAY	DEPTH FEET	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00070 TURB JKSN JTU	00095 CNDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L
76/11/17	11	00	0.010K	0.001K	0.010K	0.730	0.081	0.180	0.110	3.3	119	2
	22	00	0.020	0.001K	0.010	0.820	0.058	0.150	0.110	3.1	91	2
77/06/07	11	00	0.003	0.003	0.010K	0.900	0.072	0.140	0.140	9.0	99	9
	23	00	0.014	0.003	0.010K	1.000	0.064	0.170	0.170	9.8	124	36

DATE FROM TO	TIME OF DAY	DEPTH FEET	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	00520 RESIDUE VOL FLT MG/L	00535 RESIDUE VOL NFLT MG/L	00410 T ALK CACO3 MG/L	00900 TOT HARD CACO3 MG/L	00929 SODIUM NA,TOT MG/L	00937 PTSSIUM K,TOT MG/L	00940 CHLORIDE CL MG/L	50060 CHLORINE TOT RESD MG/L
76/11/17	11	00	93	32		2	56	50	2.70	2.30	2K	
	22	00	111	19		2	56	48	2.70	1.90	2	
77/06/07	11	00	116	30		2K	46		3.10	1.80	2K	
	23	00	119	23		2	47		3.10	2.10	2K	

DATE FROM TO	TIME OF DAY	DEPTH FEET	01055 MANGNESE MN UG/L	01045 IRON FE,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	00042 ALTITUDE FEET AB MSL
76/11/17	11	00	10.0	360						
	22	00	10.0	360						
77/06/07	11	00		500	5K	10	50K	10	0.5K	
	23	00		2490						

STORET DATE 79/04/23

STATION #2

2020088
45 56 25.0 116 06 50.0 2
THREEMILE CR AB OUTFALL
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
21IDSURV 771004
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 01350 1360 0060
MILES 0324.30 0139.30 074.70 007.60 012.00

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	10	13.2800	37.4196	6.11716	.460629	1.93441	24.0000	6.00000	76/11/17	77/06/08
00061	STREAM	FLOW,	INST-CFS	5	7.92000	.932007	.965405	.121895	.431742	9.50000	7.30000	77/06/07	77/06/08
00070	TURB	JKSN	JTU	10	13.3700	93.3180	9.66012	.722522	3.05480	30.0000	3.40000	76/11/17	77/06/08
00095	CNDUCTVY	AT 25C	MICROMHO	10	162.700	806.243	28.3944	.174520	8.97911	199.000	130.000	76/11/17	77/06/08
00300	DO		MG/L	10	10.2800	1.91298	1.38310	.134543	.437376	12.0000	7.60000	76/11/17	77/06/08
00310	BOD	5 DAY	MG/L	5	2.80000	2.20001	1.48324	.529730	.663326	5.00000	1.00000	76/11/17	76/11/18
00335	COD	LOWLEVEL	MG/L	5	78.8000	271.206	16.4683	.208989	7.36487	107.000	64.0000	77/06/07	77/06/08
00400	PH		SU	10	7.38999	.089898	.299830	.040572	.094815	7.80000	6.70000	76/11/17	77/06/08
00403	LAB	PH	SU	10	7.64999	.116129	.340778	.044546	.107763	8.10000	7.20000	76/11/17	77/06/08
00410	T ALK	CACO3	MG/L	8	71.0000	262.000	16.1864	.227978	5.72276	88.0000	54.0000	76/11/17	77/06/08
00500	RESIDUE	TOTAL	MG/L	10	140.500	821.166	28.6560	.203957	9.06183	196.000	105.000	76/11/17	77/06/08
00505	RESIDUE	TOT VOL	MG/L	10	36.1000	337.435	18.3694	.508848	5.80891	71.0000	8.00000	76/11/17	77/06/08
00530	RESIDUE	TOT NFLT	MG/L	10	23.4000	796.489	28.2221	1.20607	8.92463	93.0000	2.00000	76/11/17	77/06/08
00535	RESIDUE	VOL NFLT	MG/L	10	3.80000	19.0667	4.36654	1.14909	1.38082	16.0000	2.00000	76/11/17	77/06/08
00610	NH3-N	TOTAL	MG/L	10	.014300	.000054	.007349	.513935	.002324	.030000	.007000	76/11/17	77/06/08
00615	NO2-N	TOTAL	MG/L	10	.006000	.000036	.006037	1.00615	.001909	.021000	.001000	76/11/17	77/06/08
00620	NO3-N	TOTAL	MG/L	9	.041111	.002286	.047813	1.16303	.015938	.130000	.010000	76/11/17	77/06/08
00625	TOT KJEL	N	MG/L	10	.928999	.197033	.443884	.477808	.140368	2.00000	.510000	76/11/17	77/06/08
00665	PHOS-TOT		MG/L P	10	.184000	.002027	.045020	.244672	.014236	.280000	.110000	76/11/17	77/06/08
00669	PHOS-TOT	HYDRO	MG/L P	10	.156000	.002249	.047423	.303993	.014996	.260000	.100000	76/11/17	77/06/08
00900	TOT HARD	CACO3	MG/L	5	76.4000	48.8057	6.98610	.091441	3.12428	88.0000	70.0000	76/11/17	76/11/18
00929	SODIUM	NA,TOT	MG/L	10	5.85999	1.49379	1.22221	.208568	.386496	7.40000	4.50000	76/11/17	77/06/08
00937	PTSSIUM	K,TOT	MG/L	10	3.37999	.468484	.684459	.202503	.216445	4.30000	2.50000	76/11/17	77/06/08
00940	CHLORIDE	CL	MG/L	10	3.00000	1.77778	1.33333	.444444	.421637	6.00000	2.00000	76/11/17	77/06/08
01027	CADMIUM	CD,TOT	UG/L	1	5.00000					5.00000	5.00000	77/06/07	77/06/07
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	77/06/07	77/06/07
01045	IRON	FE,TOT	UG/L	10	1331.00	246322	496.308	.372884	156.946	2270.00	900.000	76/11/17	77/06/08
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	77/06/07	77/06/07
01055	MANGNESE	MN	UG/L	5	68.0000	420.000	20.4939	.301381	9.16515	90.0000	50.0000	76/11/17	76/11/18
01092	ZINC	ZN,TOT	UG/L	1	9.00000					9.00000	9.00000	77/06/07	77/06/07
31501	TOT COLI	MFIMENDO	/100ML	10	51920.0	.167E+10	40947.5	.788664	12948.7	110000	1000.00	76/11/17	77/06/08
31616	FEC COLI	MFM-FCBR	/100ML	10	1228.00	3189351	1785.88	1.45429	564.743	5800.00	200.000	76/11/17	77/06/08
70507	PHOS-T	ORTHO	MG/L P	10	.078900	.000351	.018741	.237527	.005926	.108000	.053000	76/11/17	77/06/08
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	77/06/07	77/06/07

2020088
45 56 25.0 116 06 50.0 2
THREEMILE CR AB OUTFALL
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
211CSURV 771004
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00403 LAB PH SU	31501 TOT COLI MFIMENDO /100ML	31616 FEC COLI MFM-FCBR /100ML	31679 FECSTREP MF M-ENT /100ML
76/11/17	11	00	7.5		12.0	1.0		7.50	7.3	9600	200K	
	17	00	11.1		10.2	3.0		7.30	7.5	1000	200K	
	22	00	7.4		11.6	2.0		7.30	7.3	40000	200K	
76/11/18	04	00	6.0		11.0	5.0		7.50	7.2	34000	200	
	12	00	8.3		11.4	3.0		7.60	7.5	3600	600	
77/06/07	11	00	18.0	7	10.8		73.0	7.60	8.1	67000	760	
	17	00	24.0	7	9.8		73.0	7.80	8.1	80000	600	
	23	00	19.5	7	7.6		64.0	7.40	7.7	64000	920	
77/06/08	05	00	16.0	10	8.6		107.0	6.70	8.0	110000	5800	
	11	00	15.0	8	9.8		77.0	7.20	7.8	110000	2800	

DATE FROM TO	TIME OF DAY	DEPTH FEET	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00070 TURB JKSN JTU	00095 CNDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L
76/11/17	11	00	0.010	0.001K	0.010K	0.520	0.076	0.110	0.100	3.4	174	4
	17	00	0.020	0.001	0.130	0.620	0.077	0.150	0.110	5.3	189	4
	22	00	0.010	0.001	0.010	0.920	0.071	0.180	0.130	7.3	195	4
76/11/18	04	00	0.030	0.006	0.010K	0.820	0.105	0.220	0.150	25.0	199	11
	12	00	0.010	0.002	0.010K	0.510	0.070	0.160	0.120	5.7	186	2
77/06/07	11	00	0.007	0.007	0.010K	0.800	0.083	0.200	0.160	12.0	145	11
	17	00	0.021	0.005	0.020	1.000	0.092	0.180	0.170	12.0	138	31
	23	00	0.008	0.007		0.800	0.094	0.170	0.160	8.0	141	36
77/06/08	05	00	0.016	0.009	0.060	2.000	0.053	0.280	0.260	25.0	130	93
	11	00	0.011	0.021	0.110	1.300	0.108	0.190	0.200	30.0	130	38

STORET RETRIEVAL DATE 77/08/23

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45 56 25.0 116 06 50.0 2
THREEMILE CR AB OUTFALL
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
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0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	00520 RESIDUE VOL FLT MG/L	00535 RESIDUE VOL NFLT MG/L	00410 T ALK CACO3 MG/L	00900 TOT HARD CACO3 MG/L	00929 SODIUM NA,TOT MG/L	00937 PTSSIUM K,TOT MG/L	00940 CHLORIDE CL MG/L	50060 CHLORINE TOT RESD MG/L
76/11/17	11 00		137	44		2	64	88	6.40	4.30	3	
	17 00		105	8		2	88	70	7.30	3.90	4	
	22 00		119	12		2	88	76	7.40	3.90	3	
76/11/18	04 00		175	38		4	84	76	7.20	4.10	6	
	12 00		154	71		2		72	6.60	3.80	4	
77/06/07	11 00		120	33		2K			4.80	2.60	2K	
	17 00		116	25		2	54		4.90	3.10	2K	
	23 00		134	38		2K	57		4.80	2.80	2K	
77/06/08	05 00		196	51		16	59		4.50	2.80	2	
	11 00		150	41		4	54		4.70	2.50	2	

DATE FROM TO	TIME OF DAY	DEPTH FEET	01055 MANGNESE MN UG/L	01045 IRON FE,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	00042 ALTITUDE FEET AB MSL
76/11/17	11 00		50.0	1010						
	17 00		50.0	1120						
	22 00		90.0	1160						
76/11/18	04 00		90.0	1940						
	12 00		60.0	1250						
77/06/07	11 00			900	5K	10K	50K	9	0.5K	
	17 00			910						
	23 00			920						
77/06/08	05 00			2270						
	11 00			1830						

STORET DATE 79/04/23

STATION #3

2020089
45 56 30.0 116 06 40.0 2
THREEMILE CR BL OUTFALL
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
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0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 01350 1360 0060
MILES 0324.30 0139.30 074.70 007.60 011.90

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	10	14.0900	22.5166	4.74517	.336775	1.50055	22.5000	8.20000	76/11/17	77/06/08
00061	STREAM	FLOW,	INST-CFS	7	4.54428	3.86662	1.96637	.432713	.743219	7.51000	1.80000	76/11/17	77/06/08
00070	TURB	JKSN	JTU	10	19.5000	46.7222	6.83537	.350531	2.16153	35.0000	12.0000	76/11/17	77/06/08
00095	CNDUCTVY	AT 25C	MICROMHO	10	325.700	6943.66	83.3287	.255845	26.3508	429.000	164.000	76/11/17	77/06/08
00300	DO		MG/L	10	9.71999	1.12855	1.06233	.109294	.335940	11.1000	7.90000	76/11/17	77/06/08
00310	BOD	5 DAY	MG/L	5	31.8000	47.7012	6.90660	.217189	3.08873	40.0000	21.0000	76/11/17	76/11/18
00335	COD	LOWLEVEL	MG/L	5	97.2000	245.207	15.6591	.161102	7.00296	116.000	73.0000	77/06/07	77/06/08
00400	PH		SU	10	7.30000	.111111	.333333	.045662	.105409	7.70000	6.70000	76/11/17	77/06/08
00403	LAB	PH	SU	10	7.44500	.143582	.378922	.050896	.119826	7.90000	7.00000	76/11/17	77/06/08
00410	T ALK	CACO3	MG/L	10	72.5500	141.584	11.8989	.164010	3.76276	92.0000	57.0000	76/11/17	77/06/08
00500	RESIDUE	TOTAL	MG/L	10	291.900	1793.06	42.3445	.145065	13.3905	355.000	241.000	76/11/17	77/06/08
00505	RESIDUE	TOT VOL	MG/L	10	95.3000	639.132	25.2810	.265279	7.99457	143.000	63.0000	76/11/17	77/06/08
00530	RESIDUE	TOT NFLT	MG/L	10	32.4000	770.490	27.7577	.856719	8.77776	95.0000	7.00000	76/11/17	77/06/08
00535	RESIDUE	VOL NFLT	MG/L	10	9.30000	41.1222	6.41266	.689534	2.02786	18.0000	2.00000	76/11/17	77/06/08
00610	NH3-N	TOTAL	MG/L	10	1.98420	2.09060	1.44589	.728703	.457231	3.96000	.086000	76/11/17	77/06/08
00615	NO2-N	TOTAL	MG/L	10	.149700	.024820	.157542	1.05239	.049819	.530000	.013000	76/11/17	77/06/08
00620	NO3-N	TOTAL	MG/L	10	7.78899	14.6463	3.82705	.491341	1.21022	12.3000	1.10000	76/11/17	77/06/08
00625	TOT KJEL	N	MG/L	10	4.97299	3.12822	1.76868	.355656	.559305	6.97000	2.10000	76/11/17	77/06/08
00665	PHOS-TOT		MG/L P	10	4.45800	3.50957	1.87338	.420230	.592416	7.40000	1.28000	76/11/17	77/06/08
00669	PHOS-TOT	HYDRO	MG/L P	10	4.18399	2.89521	1.70153	.406676	.538071	7.00000	1.26000	76/11/17	77/06/08
00900	TOT HARD	CACO3	MG/L	5	76.4000	222.806	14.9267	.195375	6.67541	86.0000	50.0000	76/11/17	76/11/18
00929	SODIUM	NA,TOT	MG/L	9	26.0666	78.3696	8.85266	.339616	2.95089	37.0000	9.80000	76/11/17	77/06/08
00937	PTSSIUM	K,TOT	MG/L	9	6.61111	2.82867	1.68187	.254400	.560622	9.60000	3.50000	76/11/17	77/06/08
00940	CHLORIDE	CL	MG/L	9	17.5555	94.0283	9.69682	.552351	3.23227	27.0000	4.00000	76/11/17	77/06/08
01027	CADMIUM	CD,TOT	UG/L	1	5.00000					5.00000	5.00000	77/06/07	77/06/07
01042	COPPER	CU,TOT	UG/L	1	20.0000					20.0000	20.0000	77/06/07	77/06/07
01045	IRON	FE,TOT	UG/L	10	956.000	215049	463.734	.485077	146.645	2090.00	590.000	76/11/17	77/06/08
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	77/06/07	77/06/07
01055	MANGNESE	MN	UG/L	5	46.0000	80.0000	8.94427	.194441	4.00000	60.0000	40.0000	76/11/17	76/11/18
01092	ZINC	ZN,TOT	UG/L	1	67.0000					67.0000	67.0000	77/06/07	77/06/07
31501	TOT COLI	MFIMENCO	/100ML	10	47400.0	.497E+10	70507.4	1.48750	22296.4	210000	200.000	76/11/17	77/06/08
31616	FEC COLI	MFM-FCBR	/100ML	10	16406.0	.220E+10	46996.1	2.86456	14861.5	150000	200.000	76/11/17	77/06/08
50060	CHLORINE	TOT RESD	MG/L	7	.371428	.048214	.219577	.591169	.082992	.600000	.150000	76/11/17	77/06/08
70507	PHOS-T	ORTHO	MG/L P	10	3.80389	2.07093	1.43907	.378315	.455075	5.87000	1.19000	76/11/17	77/06/08
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	77/06/07	77/06/07

STORET RETRIEVAL DATE 79/04/28

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45 56 30.0 116 06 40.0 2
THREEMILE CR BL OUTFALL
16049 IDAHO
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LOWER SNAKE RIVER BASIN
211DSURV 771004
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00403 LAB PH SU	31501 TOT COLI MFIMENDO /100ML	31616 FEC COLI MFM-FCBR /100ML	31679 FECSTREP MF M-ENT /100ML
76/11/17	11 00		11.0		10.9	33.0		7.10	7.3	400	200K	
	17 00		8.2	2	11.1	21.0		7.70	7.1	1200	200K	
	22 00		11.0		10.4	31.0		7.20	7.0	200	200K	
76/11/18	04 00		9.0		10.3	34.0		7.70	7.0	200K	200K	
	12 00		11.2	2	10.3	40.0		7.10	7.1	200K	200K	
77/06/07	11 00		18.0	5	9.8		103.0	7.50	7.9	210000	150000	
	17 00		22.5	5	8.7		99.0	7.60	7.9	62000	800	
	23 00		19.0	5	7.9		95.0	7.40	7.7	45000	960	
77/06/08	05 00		16.0	6	8.8		116.0	6.70	7.8	14000	4300	
	11 00		15.0	8	9.0		73.0	7.00	7.7	130000	7000	

DATE FROM TO	TIME OF DAY	DEPTH FEET	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00070 TURB JKSN JTU	00095 CNDUCTVY AT 25C MICRONHO	00530 RESIDUE TOT NFLT MG/L
76/11/17	11 00		3.960	0.530	11.400	6.970	4.130	5.350	4.750	16.0	385	16
	17 00		3.320	0.060	12.300	6.030	5.870	7.400	7.000	12.0	429	11
	22 00		2.590	0.043	9.720	6.120	5.430	6.550	6.050	12.0	404	13
76/11/18	04 00		0.880	0.013	9.590	3.470	4.630	5.000	5.000	22.0	337	7
	12 00		3.820	0.112	11.500	6.940	4.689	5.750	5.050	17.0	413	20
77/06/07	11 00		2.550	0.282	6.700	5.800	3.340	3.150	2.930	20.0	296	38
	17 00		0.598	0.131	6.050	3.100	2.840	3.700	3.500	20.0	276	36
	23 00		0.533	0.107	1.100	3.400	2.870	3.550	3.450	16.0	270	24
77/06/08	05 00		0.086	0.015	2.480	2.100	1.190	1.280	1.260	35.0	164	95
	11 00		1.500	0.199	7.050	5.800	2.850	2.850	2.850	25.0	283	64

STORET RETRIEVAL DATE 79/04/28

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THREEMILE CR BL OUTFALL
16049 IDAHO
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211DSURV 771004
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

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DATE FROM TO	TIME OF DAY	DEPTH FEET	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	00520 RESIDUE VOL FLT MG/L	00535 RESIDUE VOL NFLT MG/L	00410 T ALK CACO3 MG/L	00900 TOT HARD CACO3 MG/L	00929 SODIUM NA,TOT MG/L	00937 PTSSIUM K,TOT MG/L	00940 CHLORIDE CL MG/L	50060 CHLORINE TOT RESD MG/L
76/11/17	11	00	325	125		4	84	86	29.40	9.00	25	0.60
	17	00	353	116		9	80	84	36.20	7.90	26	
	22	00	302	69		9	84	82	37.00	7.50	27	
76/11/18	04	00	302	92		4	84	80	27.60	6.60	26	0.60
	12	00	355	143		18	92	90	32.10	8.00	24	0.60
77/06/07	11	00	263	84		7	81		21.10	5.60	8	
	17	00	244	80		2K	64		22.70	5.40	10	0.20
	23	00	258	88		4	69					0.30
77/06/08	05	00	241	63		18	57		9.80	3.50	4	0.15
	11	00	276	93		18	71		18.70	6.00	8	0.15

DATE FROM TO	TIME OF DAY	DEPTH FEET	01055 MANGNESE MN UG/L	01045 IRON FE,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	00042 ALTITUDE FEET AB MSL
76/11/17	11	00	40.0	620						
	17	00	40.0	590						
	22	00	50.0	680						
76/11/18	04	00	40.0	1340						
	12	00	60.0	620						
77/06/07	11	00		920	5K	20	50K	67	0.5K	
	17	00		830						
	23	00		780						
77/06/08	05	00		2090						
	11	00		1090						

STORET DATE 79/04/23

STATION #4

2020090
45 57 10.0 116 05 55.0 2
THREEMILE CR 1.25 MI BL OUTFALL
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
21IDSURV 771004
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX I310001 002740 01350 1360 0060
MILES 0324.30 0139.30 074.70 007.60 010.80

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	7	12.4000	27.5501	5.24882	.423292	1.98387	20.0000	7.80000	76/11/17	77/06/07
00061	STREAM	FLOW,	INST-CFS	2	4.60000	8.00000	2.82843	.614876	2.00000	6.60000	2.60000	76/11/17	77/06/07
00070	TURB	JKSN	JTU	4	9.87500	7.06250	2.65754	.269118	1.32877	13.0000	6.50000	76/11/17	77/06/07
00095	CNDUCTVY	AT 25C	MICROMHO	4	312.750	7428.91	86.1911	.275591	43.0956	404.000	222.000	76/11/17	77/06/07
00300	DO		MG/L	7	8.51428	1.12142	1.05897	.124376	.400253	10.4000	7.20000	76/11/17	77/06/07
00310	BOD	5 DAY	MG/L	2	12.0000	8.00000	2.82843	.235702	2.00000	14.0000	10.0000	76/11/17	76/11/17
00335	COD	LOWLEVEL	MG/L	2	88.5000	84.5000	9.19239	.103869	6.50000	95.0000	82.0000	77/06/07	77/06/07
00400	PH		SU	7	7.31428	.051473	.226877	.031018	.085751	7.70000	7.10000	76/11/17	77/06/07
00403	LAB	PH	SU	4	7.37500	.315892	.562043	.076209	.281022	8.10000	6.80000	76/11/17	77/06/07
00410	T ALK	CACO3	MG/L	4	71.2500	171.583	13.0990	.183845	6.54949	88.0000	56.0000	76/11/17	77/06/07
00500	RESIDUE	TOTAL	MG/L	4	260.250	2267.58	47.6192	.182975	23.8096	301.000	205.000	76/11/17	77/06/07
00505	RESIDUE	TOT VOL	MG/L	3	76.3333	320.336	17.8979	.234471	10.3334	97.0000	66.0000	76/11/17	77/06/07
00530	RESIDUE	TOT NFLT	MG/L	3	22.6667	296.334	17.2144	.759457	9.93871	42.0000	9.00000	76/11/17	77/06/07
00535	RESIDUE	VOL NFLT	MG/L	3	3.33333	1.33334	1.15470	.346412	.666669	4.00000	2.00000	76/11/17	77/06/07
00610	NH3-N	TOTAL	MG/L	4	.624000	.438342	.662074	1.06102	.331037	1.60000	.159000	76/11/17	77/06/07
00615	NO2-N	TOTAL	MG/L	4	.511000	.078498	.280175	.548289	.140088	.909000	.276000	76/11/17	77/06/07
00620	NO3-N	TOTAL	MG/L	4	7.83749	15.5601	3.94463	.503302	1.97231	12.6000	4.55000	76/11/17	77/06/07
00625	TOT KJEL	N	MG/L	4	3.22500	1.58249	1.25797	.390069	.628986	5.10000	2.40000	76/11/17	77/06/07
00665	PHOS-TOT		MG/L P	4	4.38000	4.37515	2.09169	.477554	1.04584	6.55000	2.24000	76/11/17	77/06/07
00669	PHOS-TOT	HYDRO	MG/L P	4	4.26250	4.18732	2.04629	.480069	1.02315	6.25000	2.10000	76/11/17	77/06/07
00900	TOT HARD	CACO3	MG/L	2	108.000	648.000	25.4558	.235702	18.0000	126.000	90.0000	76/11/17	76/11/17
00929	SODIUM	NA,TOT	MG/L	4	26.0000	77.0474	8.77766	.337603	4.38883	36.1000	16.7000	76/11/17	77/06/07
00937	PTSSIUM	K,TOT	MG/L	4	6.20000	2.16671	1.47198	.237415	.735988	7.70000	4.70000	76/11/17	77/06/07
00940	CHLORIDE	CL	MG/L	4	17.7500	102.917	10.1448	.571537	5.07239	27.0000	8.00000	76/11/17	77/06/07
01027	CADMIUM	CD,TOT	UG/L	1	5.00000					5.00000	5.00000	77/06/07	77/06/07
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	77/06/07	77/06/07
01045	IRON	FE,TOT	UG/L	4	760.000	18200.0	134.907	.177510	67.4537	960.000	670.000	76/11/17	77/06/07
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	77/06/07	77/06/07
01055	MANGNESE	MN	UG/L	2	110.000	200.000	14.1421	.128565	10.0000	120.000	100.000	76/11/17	76/11/17
01092	ZINC	ZN,TOT	UG/L	1	19.0000					19.0000	19.0000	77/06/07	77/06/07
31501	TOT COLI	MFIMENDO	/100ML	4	40200.0	.822E+09	28677.9	.713382	14339.0	75000.0	8800.00	76/11/17	77/06/07
31616	FEC COLI	MFM-FCBR	/100ML	4	1070.00	1906266	1380.68	1.29035	690.338	3100.00	200.000	76/11/17	77/06/07
31679	FECSTREP	MF M-ENT	/100ML	1	300.000					300.000	300.000	77/06/07	77/06/07
50060	CHLORINE	TOT RESD	MG/L	1	.150000					.150000	.150000	77/06/07	77/06/07
70507	PHOS-T	ORTHO	MG/L P	4	4.01500	4.57137	2.13807	.532522	1.06904	6.16000	1.94000	76/11/17	77/06/07
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	77/06/07	77/06/07

STORET RETRIEVAL DATE 79/04/28

2020090
45 57 10.0 116 05 55.0 2
THREEMILE CR 1.25 MI BL OUTFALL
16049 IDAHO
PACIFIC NORTHWEST
LOWER SNAKE RIVER BASIN
21IDSURV 771004
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00403 LAB PH SU	31501 TOT COLI MFIMENDO /100ML	31616 FEC COLI MFM-FCBR /100ML	31679 FECSTREP MF M-ENT /100ML
76/11/17	11	00	9.5		10.4	14.0		7.10	7.1	27000	200K	
	17	00	10.2	3	8.0			7.70				
	22	00	9.3		8.0	10.0		7.20	6.8	8800	200	
76/11/18	04	00	7.8		8.0			7.20				
	12	00	10.0		9.3			7.10				
77/06/07	11	00	20.0	7	8.7		62.0	7.50	8.1	75000	3100	
	23	00	20.0		7.2		95.0	7.40	7.5	50000	780	300

DATE FROM TO	TIME OF DAY	DEPTH FEET	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00070 TURB JKSN JTU	00095 CNDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L
76/11/17	11	00	0.280	0.364	12.600	2.700	5.530	5.750	5.750	10.0	366	17
	22	00	1.600	0.909	9.560	5.100	6.160	6.550	6.250	6.5	404	9
77/06/07	11	00	0.457	0.495	4.550	2.700	1.940	2.240	2.100	10.0	259	
	23	00	0.159	0.276	4.640	2.400	2.430	2.980	2.950	13.0	222	42

DATE FROM TO	TIME OF DAY	DEPTH FEET	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	00520 RESIDUE VOL FLT MG/L	00535 RESIDUE VOL NFLT MG/L	00410 T ALK CACO3 MG/L	00900 TOT HARD CACO3 MG/L	00929 SODIUM NA,TOT MG/L	00937 PTSSIUM K,TOT MG/L	00940 CHLORIDE CL MG/L	50060 CHLORINE TOT RESD MG/L
76/11/17	11	00	301	97		4	56	126	30.20	7.70	27	
	22	00	299	66		4	88	90	36.10	7.20	26	
77/06/07	11	00	205				70		16.70	4.70	8	
	23	00	236	66		2K	71		21.00	5.20	10	0.15

DATE FROM TO	TIME OF DAY	DEPTH FEET	01055 MANGNESE MN UG/L	01045 IRON FE,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	00042 ALTITUDE FEET AB MSL
76/11/17	11	00	100.0	670						
	22	00	120.0	690						
77/06/07	11	00		720	5K	10	50K	19	0.5K	
	23	00		960						

STORET DATE 79/04/23

STATION #5

2020091
45 57 10.0 166 05 55.0 2
THREE MILE CK-3.0 MI BL OUTFALL
16049 IDAHO
PACIFIC NORTHWEST 1308
LOWER SNAKE RIVER
211CSURV 771004
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 01350 1360 0060
MILES 0324.30 0139.30 074.70 007.60 009.00

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	7	11.4857	38.4482	6.20066	.539859	2.34363	21.0000	6.90000	76/11/17	77/06/07
00070	TURB	JKSN	JTU	7	13.4714	30.1225	5.48839	.407410	2.07442	22.0000	5.30000	76/11/17	77/06/07
00095	CNDUCTVY	AT 25C	MICROMHO	7	322.571	7271.06	85.2705	.264346	32.2292	413.000	189.000	76/11/17	77/06/07
00300	DO		MG/L	7	10.0857	6.72148	2.59258	.257055	.979903	14.2000	6.50000	76/11/17	77/06/07
00310	BOD	5 DAY	MG/L	2	3.50000	.500000	.707107	.202030	.500000	4.00000	3.00000	76/11/17	76/11/17
00335	COD	LOWLEVEL	MG/L	2	75.0000	8.00000	2.82843	.037712	2.00000	77.0000	73.0000	77/06/07	77/06/07
00400	PH		SU	7	7.64285	.146281	.382467	.050042	.144559	8.40000	7.30000	76/11/17	77/06/07
00403	LAB	PH	SU	4	7.63750	.249013	.499012	.065337	.249506	8.30000	7.10000	76/11/17	77/06/07
00410	T ALK	CACO3	MG/L	7	77.4286	112.957	10.6281	.137264	4.01705	92.0000	64.0000	76/11/17	77/06/07
00500	RESIDUE	TOTAL	MG/L	7	250.429	7261.97	85.2172	.340285	32.2091	355.000	105.000	76/11/17	77/06/07
00505	RESIDUE	TOT VOL	MG/L	7	73.5714	1669.96	40.8651	.555448	15.4456	143.000	8.00000	76/11/17	77/06/07
00530	RESIDUE	TOT NFLT	MG/L	7	12.2857	171.571	13.0985	1.06616	4.95078	38.0000	2.00000	76/11/17	77/06/07
00535	RESIDUE	VOL NFLT	MG/L	7	4.57143	35.6190	5.96817	1.30554	2.25576	18.0000	2.00000	76/11/17	77/06/07
00610	NH3-N	TOTAL	MG/L	7	.704285	1.98507	1.40893	2.00050	.532524	3.82000	.010000	76/11/17	77/06/07
00615	NO2-N	TOTAL	MG/L	7	.085857	.009911	.099553	1.15952	.037627	.291000	.001000	76/11/17	77/06/07
00620	NO3-N	TOTAL	MG/L	7	6.38857	19.2091	4.38282	.686041	1.65655	11.5000	.130000	76/11/17	77/06/07
00625	TOT KJEL	N	MG/L	7	3.33285	5.50403	2.34607	.703921	.886730	6.94000	.620000	76/11/17	77/06/07
00665	PHOS-TOT		MG/L P	7	3.88428	5.64743	2.37643	.611807	.898207	6.55000	.150000	76/11/17	77/06/07
00669	PHOS-TOT	HYDRO	MG/L P	7	3.61000	4.67586	2.16237	.598996	.817301	6.05000	.110000	76/11/17	77/06/07
00900	TOT HARD	CACO3	MG/L	5	75.6000	266.806	16.3342	.216061	7.30487	90.0000	50.0000	76/11/17	76/11/18
00929	SODIUM	NA,TOT	MG/L	7	23.1143	89.1112	9.43987	.408400	3.56794	32.9000	7.30000	76/11/17	77/06/07
00937	POTSSIUM	K,TOT	MG/L	7	6.01428	3.10478	1.76204	.292976	.665989	8.00000	3.90000	76/11/17	77/06/07
00940	CHLORIDE	CL	MG/L	7	17.0000	102.333	10.1160	.595058	3.82349	26.0000	4.00000	76/11/17	77/06/07
01027	CADMIUM	CD,TOT	UG/L	1	5.00000					5.00000	5.00000	77/06/07	77/06/07
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	77/06/07	77/06/07
01045	IRON	FE,TOT	UG/L	7	808.571	129315	359.604	.444740	135.918	1340.00	410.000	76/11/17	77/06/07
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	77/06/07	77/06/07
01055	MANGNESE	MN	UG/L	5	38.0000	670.000	25.8843	.681167	11.5758	60.0000	10.0000	76/11/17	76/11/18
01092	ZINC	ZN,TOT	UG/L	1	118.000					118.000	118.000	77/06/07	77/06/07
31501	TOT COLI	MFIMENDO	/100ML	4	28450.0	.976E+09	31247.6	1.09833	15623.8	75000.0	7800.00	76/11/17	77/06/07
31616	FEC COLI	MFM-FCBR	/100ML	4	325.000	24100.0	155.242	.477667	77.6209	520.000	200.000	76/11/17	77/06/07
31679	FECSTREP	MF M-ENT	/100ML	2	200.000	.000000	.000000		.000000	200.000	200.000	76/11/17	76/11/17
50060	CHLORINE	TOT RESD	MG/L	3	.600000	.476E-06	.000691	.001151	.000399	.600000	.600000	76/11/17	76/11/18
70507	PHOS-T	ORTHO	MG/L P	7	3.18657	3.61650	1.90171	.596790	.718779	4.88900	.077000	76/11/17	77/06/07
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	77/06/07	77/06/07

STORET RETRIEVAL DATE 77/04/28

2020091
45 57 10.0 166 05 55.0 2
THREE MILE CK-3.0 MI BL OUTFALL
16049 IDAHO
PACIFIC NORTHWEST 1308
LOWER SNAKE RIVER
211DSURV 771004
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00403 LAB PH SU	31501 TOT COLI MFTMENDO /100ML	31616 FEC COLI MFM-FCBR /100ML	31679 FECSTREP MF M-ENT /100ML
76/11/17	11	00	7.2		14.2	3.0		7.70	7.5	16000	200	200K
	17	00	8.5		9.6			7.50				
	22	00	8.0		9.2	4.0		7.30	7.1	15000	200K	200K
76/11/18	04	00	6.9		8.7			7.30				
	12	00	8.8		12.8			7.80				
77/06/07	11	00	20.0		9.6		77.0	8.40	8.3	7800	380	
	23	00	21.0		6.5		73.0	7.50	7.6	75000	520	

DATE FROM TO	TIME OF DAY	DEPTH FEET	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00070 TURB JKSN JTU	00095 CNDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L
76/11/17	11	00	0.070	0.101	7.460	2.080	4.130	5.350	4.750	16.0	385	2
	17	00	0.020	0.001	0.130	0.620	0.077	0.150	0.110	5.3	189	4
	22	00	0.010	0.045	9.900	6.120	4.800	6.550	6.050	12.0	404	2
76/11/18	04	00	0.880	0.013	9.590	3.470	4.630	5.000	5.000	22.0	337	7
	12	00	3.820	0.112	11.500	6.940	4.839	5.750	5.050	17.0	413	20
77/06/07	11	00	0.034	0.038	1.620	2.000	1.580	1.840	1.760	9.0	254	13
	23	00	0.096	0.291	4.520	2.100	2.200	2.550	2.550	13.0	276	38

STORET RETRIEVAL DATE 79/04/28

2020091
45 57 10.0 166 05 55.0 2
THREE MILE CK-3.0 MI BL OUTFALL
16049 IDAHO
PACIFIC NORTHWEST 1308
LOWER SNAKE RIVER
211DSURV 771004
0000 FEET DEPTH CLASS 00

/TYPA/AMONT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	00520 RESIDUE VOL FLT MG/L	00535 RESIDUE VOL NFLT MG/L	00410 T ALK CACO3 MG/L	00900 TOT HARD CACO3 MG/L	00929 SODIUM NA,TOT MG/L	00937 PTSSIUM K,TOT MG/L	00940 CHLORIDE CL MG/L	50060 CHLORINE TOT RESD MG/L
76/11/17	11 00		285	79		2	84	88	32.90	7.90	24	0.60
	17 00		105	8		2	88	70	7.30	3.90	4	
	22 00		298	73		2	68	90	26.90	6.90	26	
76/11/18	04 00		302	92		4	64	80	27.60	6.60	26	0.60
	12 00		355	143		18	92	50	32.10	8.00	24	0.60
77/06/07	11 00		181	51		2K	72		15.20	4.00	6	
	23 00		227	69		2K	74		19.80	4.80	9	

DATE FROM TO	TIME OF DAY	DEPTH FEET	01055 MANGNESE MN UG/L	01045 IRON FE,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	00042 ALTITUDE FEET AB MSL
76/11/17	11 00		10.0	430						
	17 00		50.0	1120						
	22 00		10.0	410						
76/11/18	04 00		60.0	1340						
	12 00		60.0	620						
77/06/07	11 00			710	5	10	50K	118	0.5K	
	23 00			1030						

APPENDIX C

Figures

NOTE: Samples were obtained on two 24-hour sampling periods. Samples were taken approximately five times over the 24-hour period. The points on the graphs represent the average of the separate samples taken during this period.

STORET
2020088 - 2020092
Threemile Creek

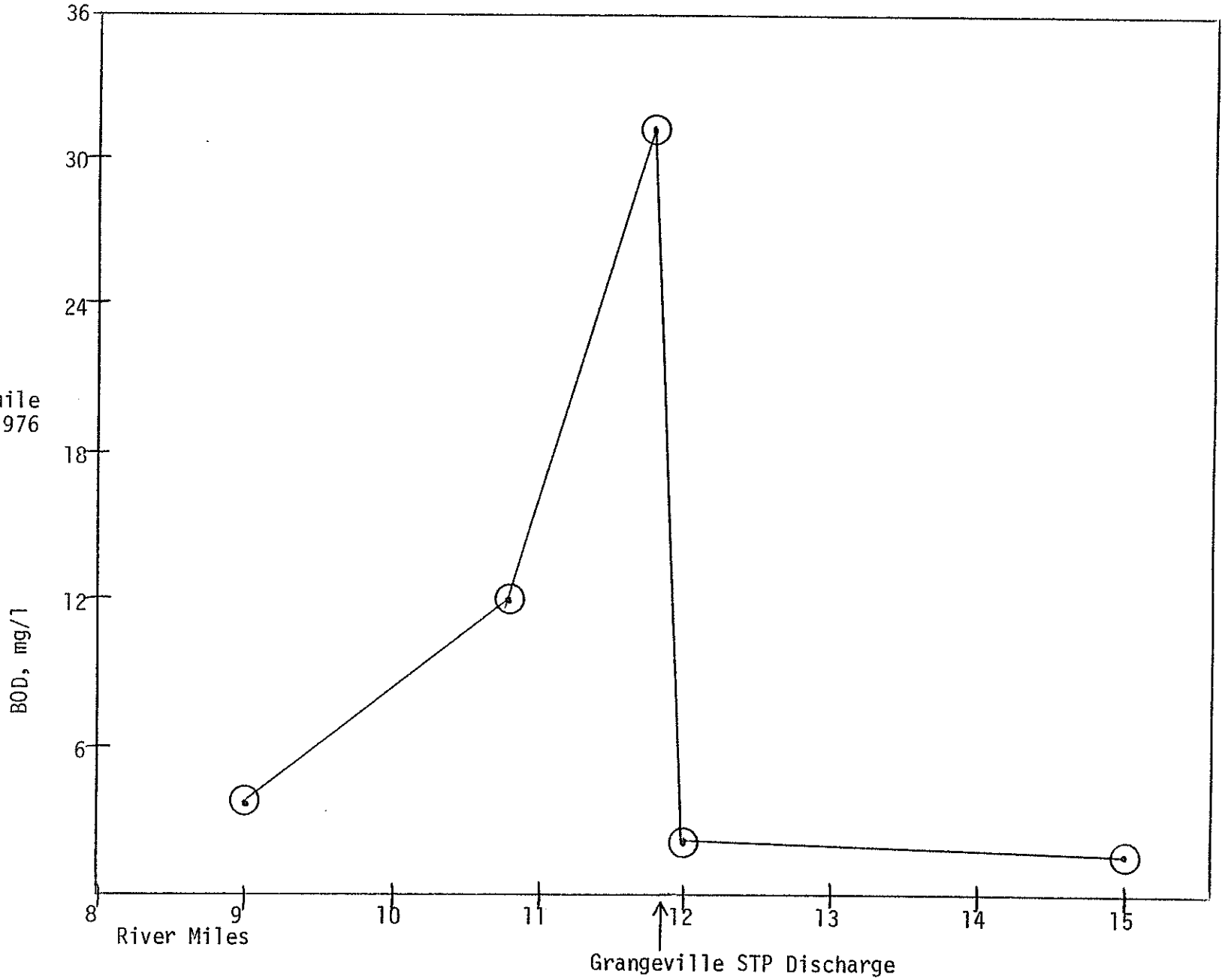
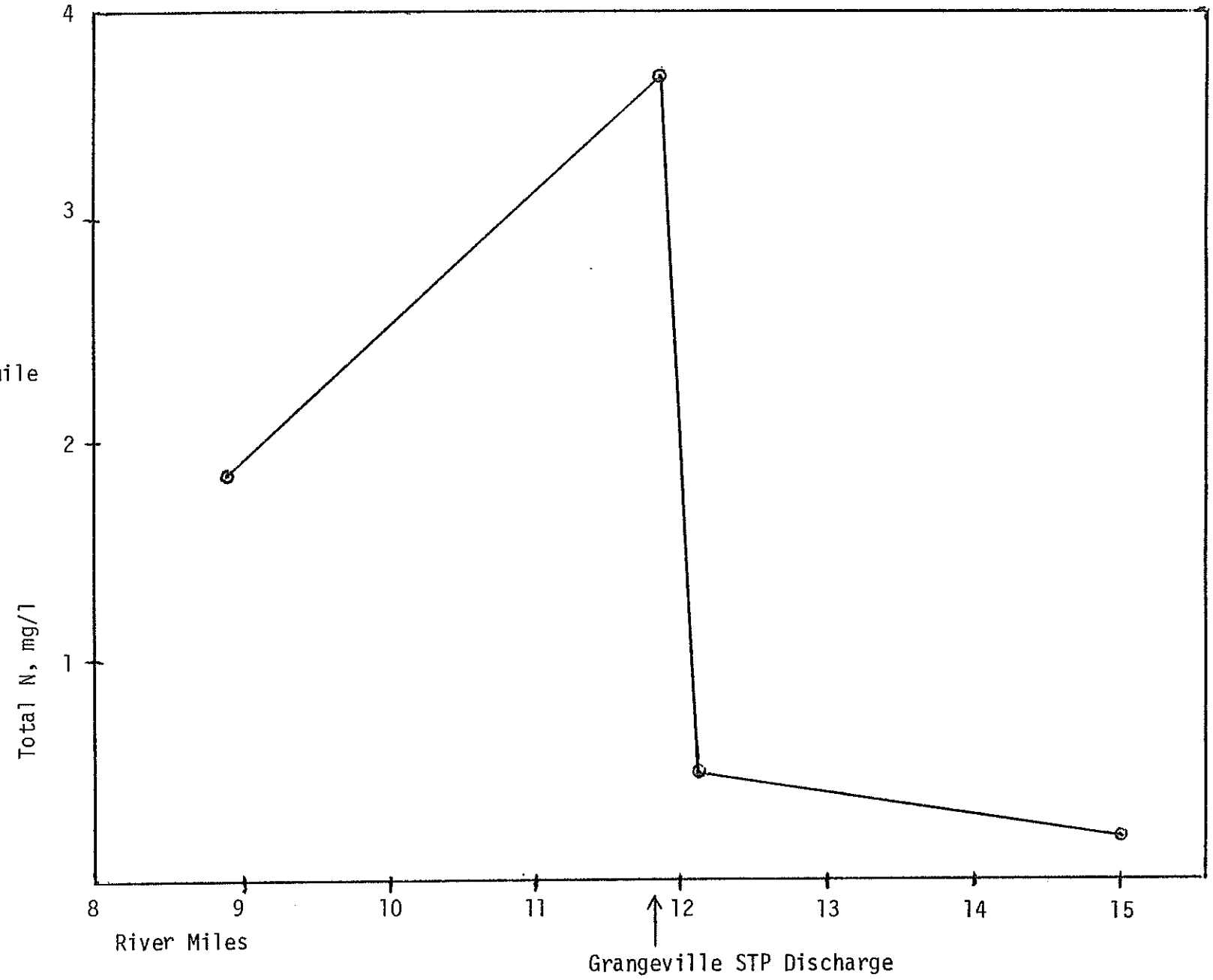


FIGURE 2:

Biochemical Oxygen Demand, mg/l for Threemile Creek on Nov. 1976

FIGURE 3:

Total Nitrogen, mg/l, for Threemile Creek



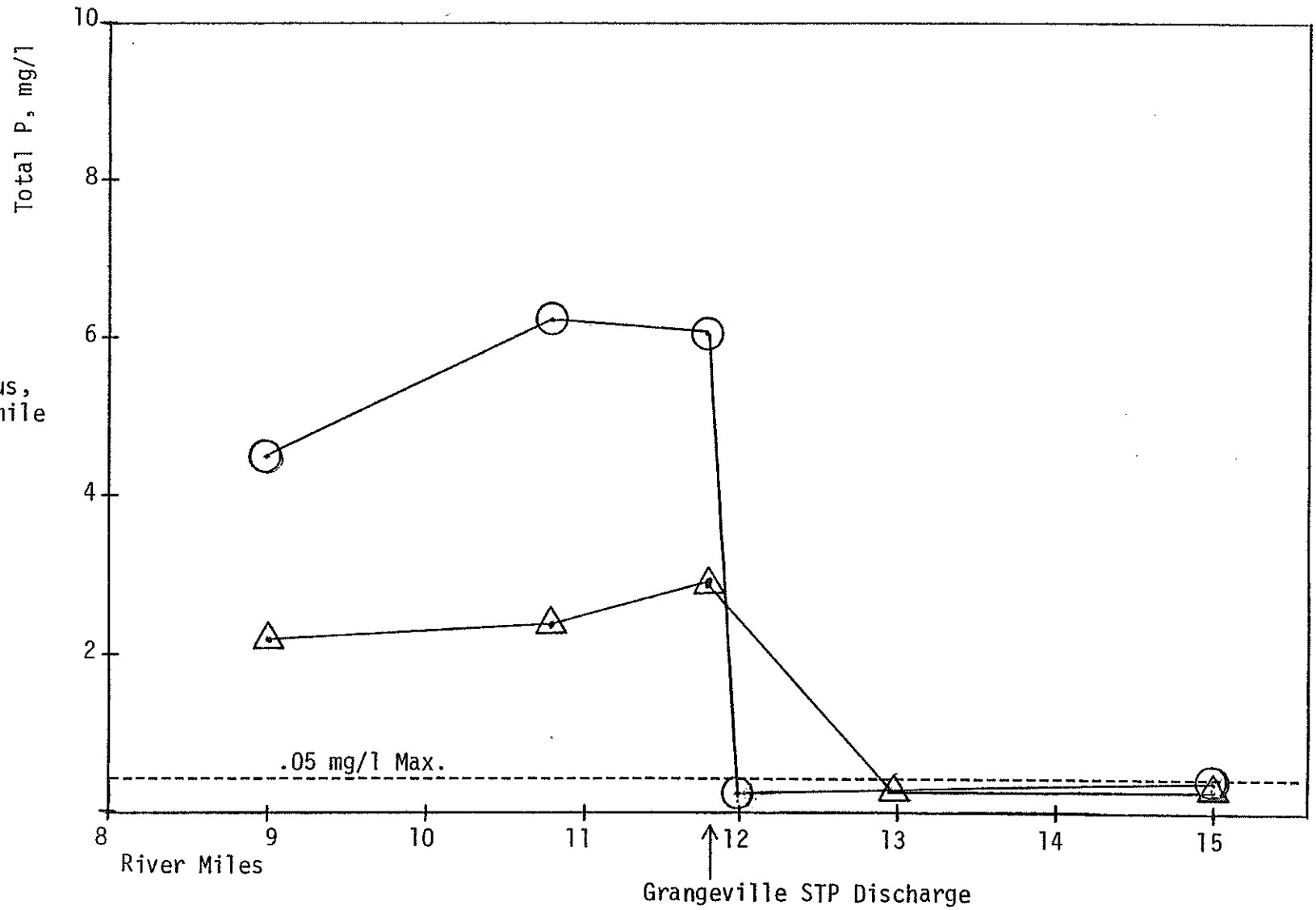


FIGURE 4:

Total Phosphorus, mg/l for Threemile Creek

○ Nov. 1976

△ June 1977

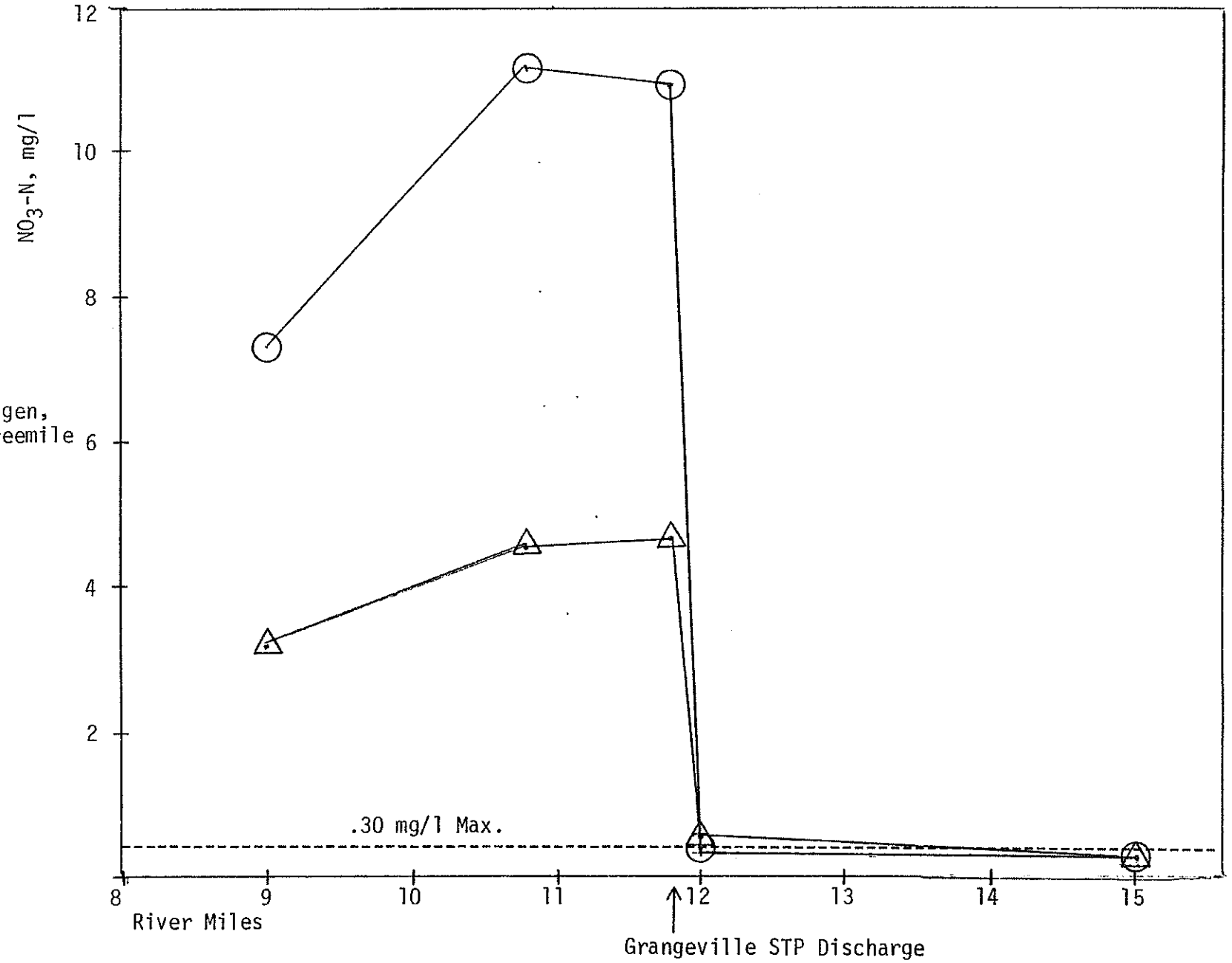


FIGURE 5:

Nitrate-Nitrogen, mg/l, for Threemile Creek

○ Nov. 1976

△ June 1977

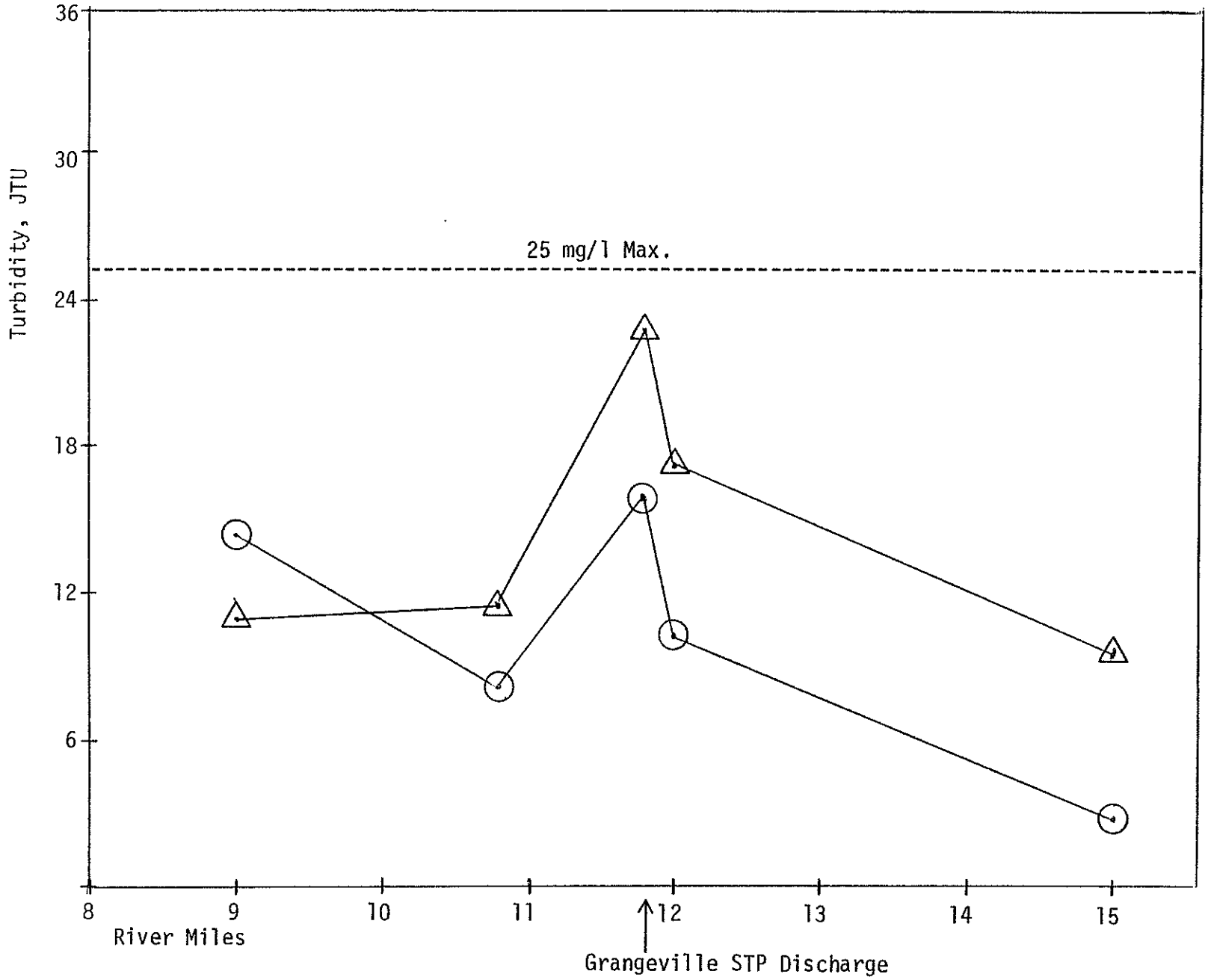


FIGURE 6:

Turbidity, JTU, for Threemile

○ Nov. 1976

△ June 1977

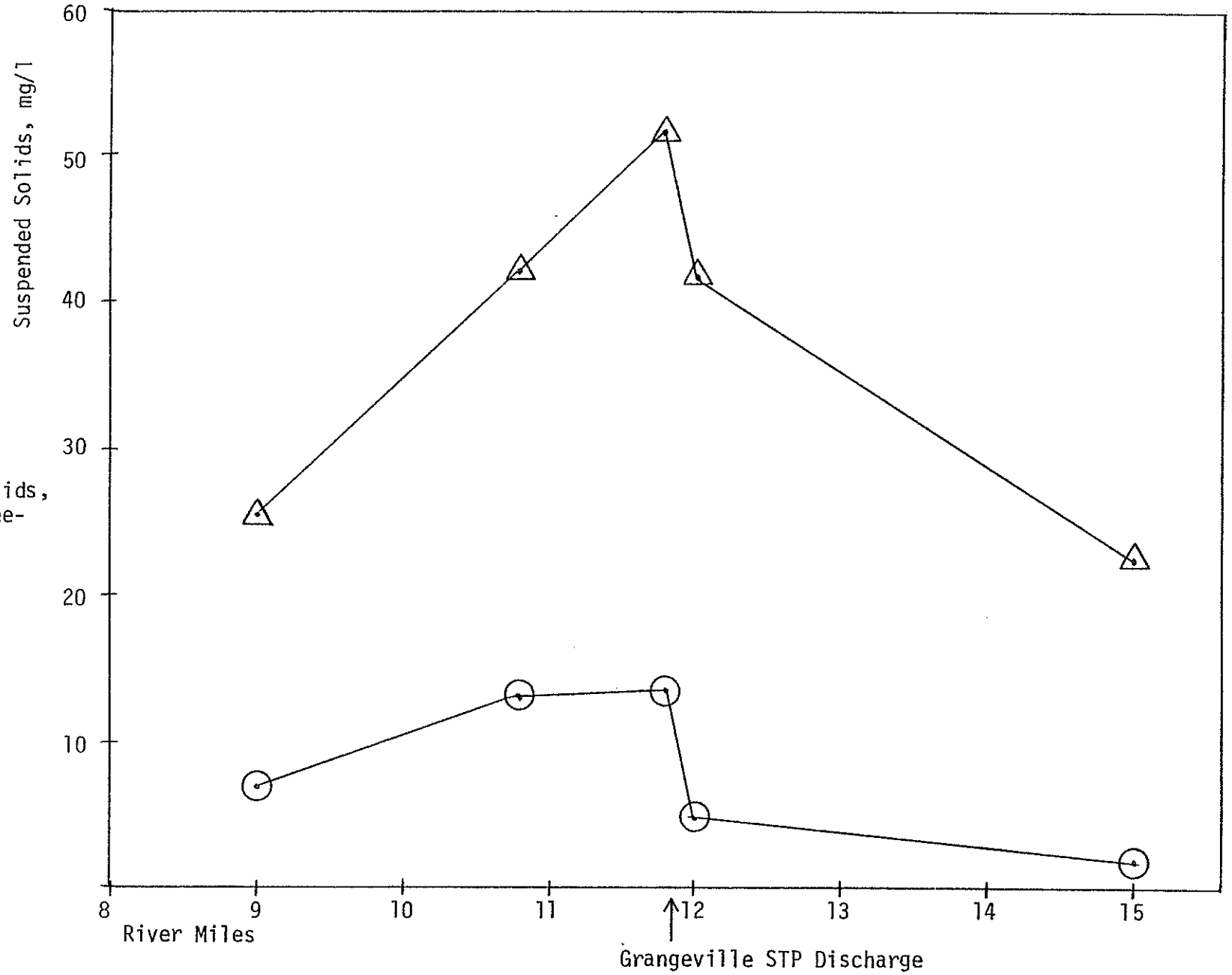


FIGURE 7:

Total Residue, Nonfilterable (Suspended Solids, mg/l) for Three-mile Creek

○ Nov. 1976

△ June 1977

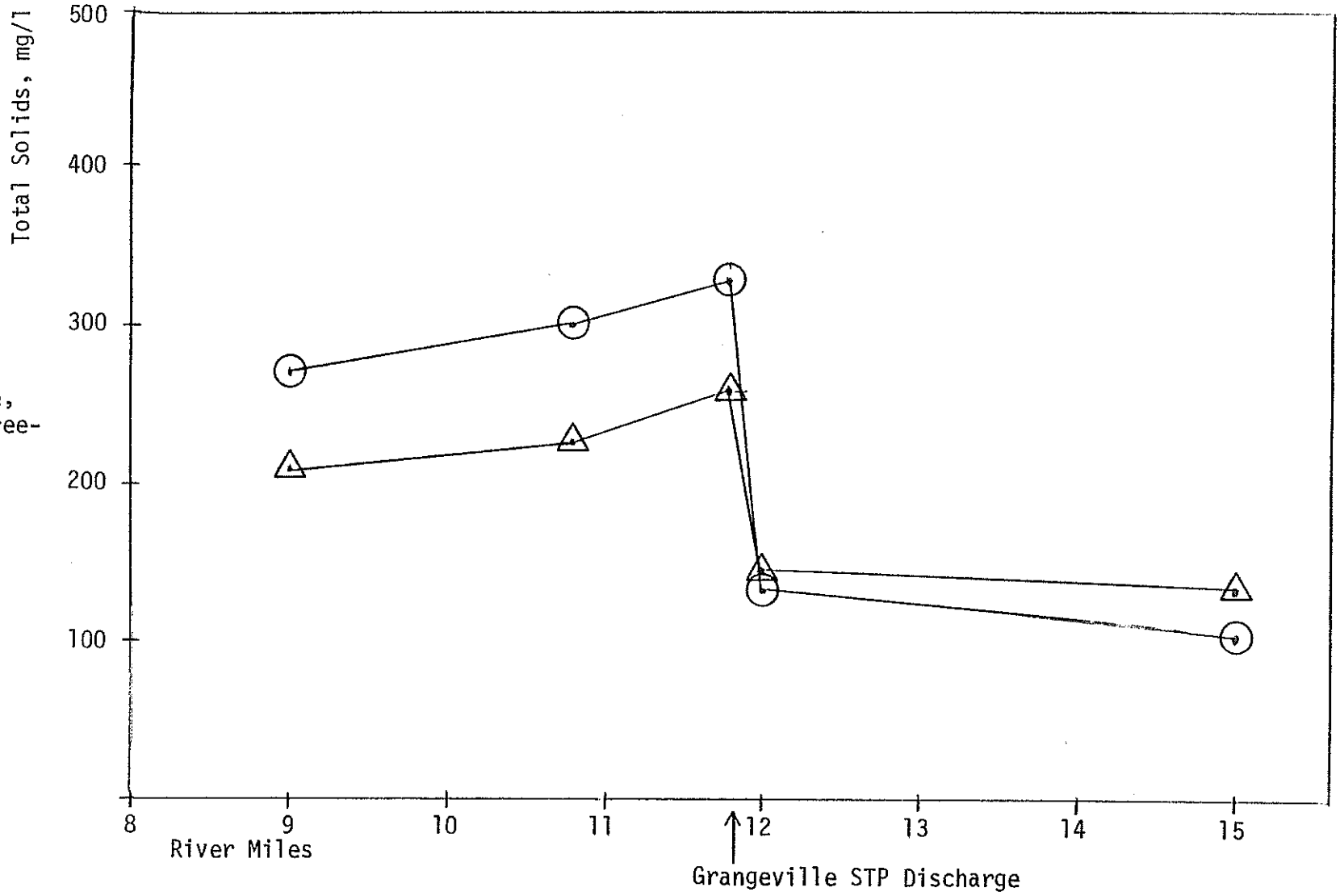


FIGURE 8:

Total Residue, mg/l, for Three-mile Creek

○ Nov. 1976

△ June 1977

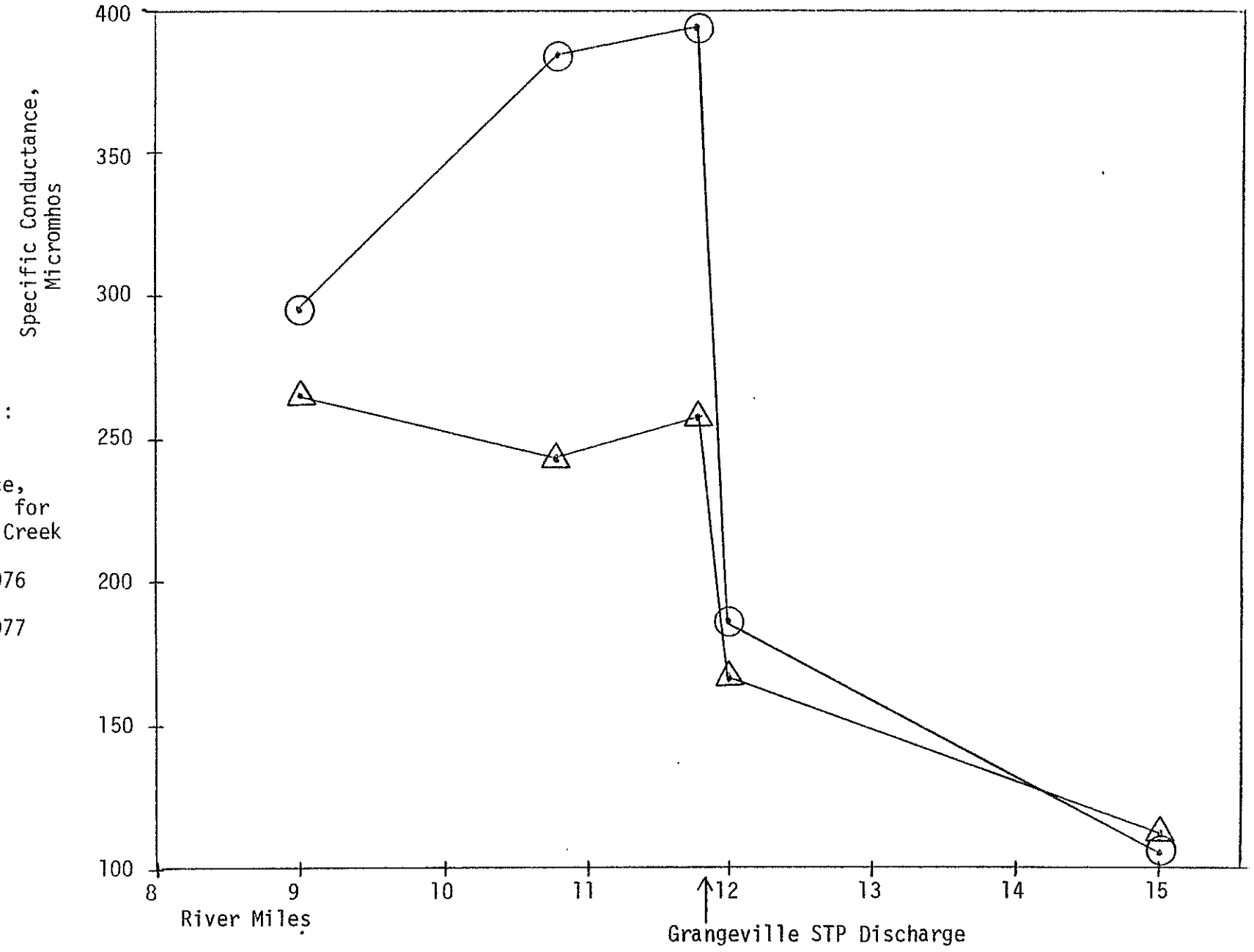


FIGURE 9:

Specific Conductance, micromhos, for Threemile Creek

○ Nov. 1976

△ June 1977

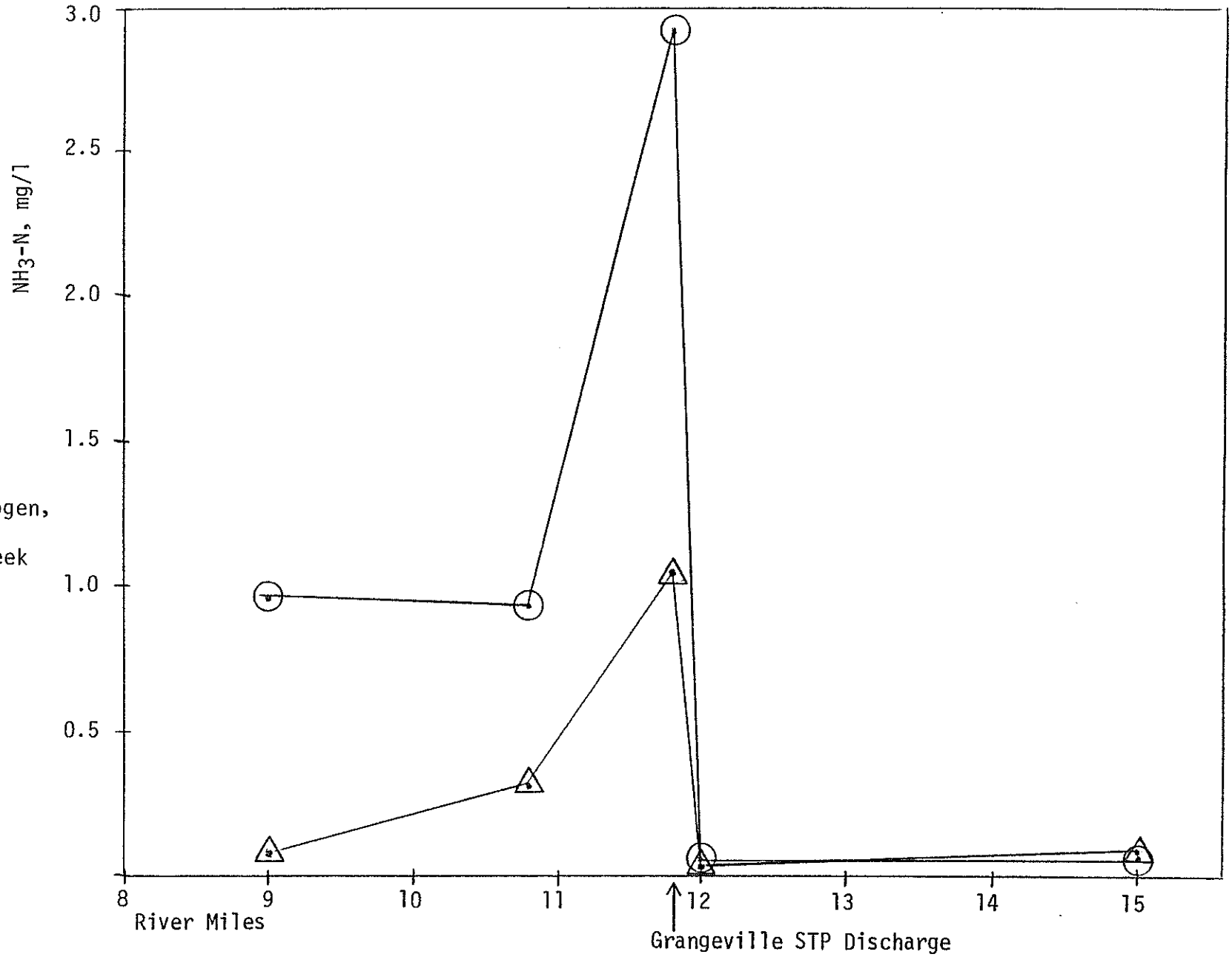


FIGURE 10:

Ammonia-Nitrogen, mg/l, for Threemile Creek

○ Nov. 1976

△ June 1977

APPENDIX D

Idaho Water Quality Standards and Appropriate Criteria

III. GENERAL REQUIREMENTS

A. Interstate Compacts, Court Decrees and Adjudicated Water Rights

It shall be the policy of the Board that the adoption of water quality standards and the enforcement of such standards is not intended to conflict with the apportionment of water to the State of Idaho through any of the interstate compacts or court decrees, or to interfere with the rights of Idaho appropriators in the utilization of the water appropriations which have been granted to them under the statutory procedure or to interfere with water quality criteria established by mutual agreement of the participants in interstate water pollution control enforcement procedures.

B. Waters of the State Protected

All waters of the State to be protected for appropriate beneficial use shall include all recreational use in and/or on the water surface and for preservation and propagation of desirable species of aquatic biota shall include all natural streams and lakes, reservoirs or impoundments on natural streams and other specified waterways unless excepted on the basis of existing irreparable conditions which preclude such uses. Man-made waterways, unless otherwise specified, shall be protected for the use for which the waterways were developed.

C. Highest and Best Practicable Treatment and Control Required

Notwithstanding the water quality standards contained herein, where a higher standard can be achieved, the highest and best practicable treatment and/or control of wastewaters, activities and flows shall be provided so as to maintain dissolved oxygen at the highest desirable levels and overall water quality as good as possible, and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor and other deleterious factors at the lowest desirable levels. Such policy to apply not only to existing wastewater sources but to future wastewater sources as they may develop, and for such other streams not listed herein.

D. Antidegradation of State Waters

Waters whose existing quality is better than the established standards as of the date on which such standards become effective will be maintained at their existing high quality. These and other waters of Idaho will not be lowered in quality unless and until it has been affirmatively demonstrated to the Department and the Federal Environmental Protection Agency that such change is justifiable as a result of necessary economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters. This will require that any industrial, public or private project or development which would constitute a new source of water pollution or an increased source

of water pollution to high quality waters will be required, as part of the initial project design, to provide the highest and best degree of wastewater treatment available under existing technology, and, since there are also Federal standards, these wastewater treatment requirements will be developed cooperatively.

IV. RESTRICTIONS ON THE DISCHARGE OF SEWAGE AND INDUSTRIAL WASTEWATERS AND HUMAN ACTIVITIES WHICH AFFECT WATER QUALITY IN THE WATERS OF THE STATE

A. No wastewaters shall be discharged and no activities shall be conducted in such a way that said wastewaters or activities either alone or in combination with other wastewaters or activities will violate or can reasonably be expected to violate the water quality standards contained herein.

B. It is noted that from time to time certain short-term activities which are deemed necessary to accommodate essential activities and protect the public interest may be authorized by the Department under such conditions as the Department may prescribe, even though such activities may result in a reduction of water quality below the standards contained herein.

V. MAINTENANCE OF STANDARDS OF QUALITY

A. The degree of sewage or wastewater treatment required to restore and maintain the standards of quality shall be determined in each instance by the Board and shall be based upon the following:

1. The uses which are or may likely be made of the receiving stream.

2. The size and nature of flow of the receiving stream.

3. The quantity and quality of the sewage or wastewater to be treated.

4. The presence or absence of other sources of water pollution on the same watershed.

B. The water quality standards are subject to revision (following public hearings and concurrence of the Administrator of the EPA) as technical data, surveillance programs, and technological advances make such revisions desirable. Further, public hearings for the purpose of reviewing water quality standards shall be initiated in accordance with Title 67, Chapter 52, Idaho Code.

C. Established water quality standards shall not be applicable in the receiving waters within the mixing zone of limited size adjacent to and/or surrounding a wastewater discharge outfall as defined by specific mixing zone boundaries. Aesthetic values of receiving waters shall be protected irrespective of mixing zone boundaries.

Receiving water quality outside the mixing zone will be maintained at water quality standards contained herein, or existing water quality levels, whichever is higher.

D. In the application of the use classification, the most stringent criterion of a multiple criteria shall apply.

E. Sample collection, preservation and analytical procedures to determine compliance with these standards shall conform to the procedures prescribed by the latest edition of Standard Methods For The Examination Of Water And Wastewater, and other superseding methods published by the Department following consultation with adjacent states, and the concurrence of the Environmental Protection Agency.

VI. WATER USE CLASSIFICATION

The designated use(s) for which the waters of the State are to be protected shall include, but not necessarily limited to domestic and industrial water supply, irrigation and stock watering, recreation and/or aesthetic qualities. (See appendix, USES TO BE PROTECTED.) Recreational waters are further divided into two classes: (1) primary contact, and (2) secondary contact. Primary contact recreational waters (Class A) are for uses where the human body may come in direct contact with the raw water to the point of complete submergence. The raw water may be accidently ingested and certain sensitive organs such as eyes, ears, nose, etc. may be exposed to the water. These waters may be used for swimming, water skiing, skin diving, support and propagation of fish, aquatic and semi-aquatic life, and other forms of wildlife.

Primary contact recreational waters are further divided into sub-classes A_1 and A_2. Class A_1 is restricted to lakes and impoundments in which exceptionally high water quality exists. Waters of all lakes and impoundments shall be class A_1 unless otherwise excepted. In the instances where a flowing stream is classified and subsequently becomes an impoundment, that impoundment shall carry the same classification as the flowing stream. Class A_2 includes the remainder of the primary contact recreational waters.

Secondary contact recreational waters (Class B) are for uses in which the raw water supply is suitable for support and propagation of fish and other aquatic and semi-aquatic life, and other forms of wildlife. These waters may be used for boating, wading and other activities where ingestion of the raw water is not probable.

Waters classified as excepted (Class E) are waters in which, due to natural and/or man-made cause, the quality is not compatible with recreational uses. These waters are protected for the use(s) specified. The numerical value of the various parameters for specific Water Quality Standards contained herein under Section VIII shall apply to all Class E waters unless an alternate value for a given parameter is specified in Section IX for the waters under consideration.

Natural tributaries to the stream reaches are classified as primary recreational waters, Class A_2, unless otherwise specified. Waterways defined as a point source in Section 502(14), Public Law 92-500, are a means of conveyance for waters with no use classification. Canals and other man-made waterways excluded as a point source are protected for agricultural uses and aesthetic qualities and may be protected for other uses when specified.

In the instance where a flowing stream is classified and subsequently becomes an impoundment, that impoundment shall carry the same classification as the flowing stream. The criteria established for the various use-classifications may be modified by the Administrator for limited periods when receiving waters fall below their assigned water quality standards due to natural causes or if, in the opinion of the Administrator, the protection of the overall interest and welfare of the public requires such a modification.

VII. GENERAL WATER QUALITY STANDARDS FOR WATERS OF THE STATE

The following general water quality standards will apply to waters of the State, both surface and underground, in addition to the water quality standards set forth for specifically classified waters. Waters of the State shall not contain:

A. Toxic chemicals of other than natural origin in concentrations found to be of public health significance or to adversely affect the use for which the waters have been classified.*

B. Deleterious substances of other than natural origin in concentrations that cause tainting of edible species of fish or tastes and odors to be imparted to drinking water supplies.

C. Radioactive materials or radioactivity other than of natural origin which

   1. Exceed 1/3 of the values listed in Column 2, Table II, Appendix A, Idaho Radiation Control Regulations as adopted by the Board on May 9, 1973.

   2. Exceed the concentrations specified in the 1962 U. S. Public Health Service Drinking Water Standards for waters used for domestic supplies.

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* Guides such as the Water Quality Criteria published by the State of California Water Quality Control Board (Second Edition, 1963) and more recent research papers will be used in evaluating the tolerances of the various toxic chemicals for the use indicated.

3. Have a demonstrable effect on aquatic life.

The concentration of radioactive materials in these waters shall be less than those required to meet the Radiation Protection Guides for maximum exposure of critical human organs recommended by the former Federal Radiation Council in the case of foodstuffs harvested from these waters for human consumption.

D. Floating or submerged matter not attributable to natural causes.

E. Excess nutrients of other than natural origin that cause visible slime growths or other nuisance aquatic growths.

F. Visible concentrations of oil, sludge deposits, scum, foam or other material that may adversely affect the use indicated.

G. Objectionable turbidity which can be traced to a man-made source.

VIII. SPECIFIC WATER QUALITY STANDARDS

No wastewaters shall be discharged and/or no activity shall be conducted in waters of the State which either alone or in combination with other wastewaters or activities will cause in waters of any specified reach, lake or impoundment, or in general surface waters of the State

A. The organism concentrations of the coliform group

1. In waters of lakes and impoundments (A_1), except the following, which are classified as A_2 waters:

American Falls Reservoir	R.M. 738.0 to R.M. 714.0
Lake Walcott	
Milner Lake	R.M. 675.0 to R.M. 640.0
Murtaugh Lake	R.M. 690.0 to R.M. 675.0
Crane Falls Reservoir	
C. J. Strike Reservoir	R.M. 514.0 to R.M. 492.0
Lake Lowell	
Brownlee Reservoir	R.M. 338.0 to R.M. 285.0
Oxbow Reservoir	R.M. 285.0 to R.M. 273.0
Hells Canyon Reservoir	R.M. 273.0 to R.M. 247.0

a. Total coliform concentrations where associated with a fecal source(s) to exceed a geometric mean of 50/100 ml., nor shall more than 20 percent of total samples during any 30-day period exceed 200/100 ml. (as determined by multiple-tube fermentation or membrane filter procedures and based on not less than 5 samples for any 30-day period).

b. Fecal coliform concentrations to exceed a geometric mean of 10/100 ml., nor shall more than 10 percent of total samples during any 30-day period exceed 20/100 ml,; or greater than 50/100 ml. for any single sample.

Coliform criteria for shoreline waters shall conform with that of Class A_2 waters. Shoreline water waters shall be defined as the 100 feet of water surface as measured from the shoreline.

2. In waters protected for primary contact recreation (A_2)

a. Total coliform concentrations where associated with a fecal source(s) to exceed a geometric mean of 240/100 ml., nor shall more than 20 percent of total samples during any 30-day period exceed 1000/100 ml. (as determined by multiple-tube fermentation or membrane filter procedures and based on not less than 5 samples for any 30-day period).

b. Fecal coliform concentrations to exceed a geometric mean of 50/100 ml., nor shall more than 10 percent of total samples during any 30-day period exceed 200/100 ml.; or greater than 500/100 ml. for any single sample.

3. In waters protected for secondary contact recreation (B)

a. Total coliform concentrations where associated with a fecal source(s) to exceed a geometric mean of 1000/100 ml., nor shall more than 20 percent of total samples during any 30-day period exceed 2400/100 ml. (as determined by multiple-tube fermentation or membrane filter procedures and based on not less than 5 samples for any 30-day period).

b. Fecal coliform concentrations to exceed a geometric mean of 200/100 ml., nor shall more than 10 percent of total samples during any 30-day period exceed 400/100 ml.; or greater than 800/100 ml. for any single sample.

B. Dissolved Oxygen

The DO concentration to be less than 6 mg/l or 90 percent of saturation, whichever is greater.

1. The DO standard shall apply to all flowing waterways.

2. The DO standard shall apply to the waters of all natural lakes and reservoirs except as excluded below:

a. In depths of water less than 100 feet in natural lakes or reservoirs, the bottom 20 percent of water depth shall

be excluded from application of the DO standard. In water depths greater than 100 feet, the bottom 20 feet of water depth shall be excluded for application of the DO standard.

b. Waters below a thermocline in stratified lakes or impoundments shall be excluded from application of the DO standard.

c. No wastewaters shall be discharged and/or no activity shall be conducted in waters excluded by a. and b. above, which either alone or in combination with other wastewaters or activities will cause the DO concentration in these waters to be less than 4 mg/l.

3. Notwithstanding exclusion of a. and b. above, the DO standard shall always apply to the top two feet of any lake or reservoir.

C. Hydrogen Ion Concentration (pH)

The pH values to be outside the range of 6.5 to 9.0. The induced variations shall not be more than 0.5 pH units.

D. Temperature

1. Any measurable increase when water temperatures are 66°F or above, or more than 2°F increase other than from natural causes when water temperatures are 64°F or less (unless otherwise specified).

2. Any increase exceeding 0.5°F due to any single source, or 2°F due to all sources combined.

For purposes of determining compliance, a "measurable increase" means no more than 0.5°F rise in temperature of the receiving water as measured immediately outside of an established mixing zone. Where mixing zone boundaries have not been defined, cognizance will be given to the opportunity for admixture of wastewater with the receiving water.

3. Any measurable increase when water temperatures are 68°F or above, or more than 2°F increase other than from natural causes when the water temperatures are 66°F or less in the following waters:

a. The main stem of the Snake River from the Oregon-Idaho border (R.M. 407) to the interstate line at Lewiston, Idaho (R.M. 139).

b. The Spokane River from Coeur d'Alene Lake outlet to the Idaho-Washington border.

c. The Palouse River from Princeton to the Idaho-Washington border.

d. The Pend Oreille River from the Pend Oreille Lake outlet to the Idaho-Washington border.

E. Turbidity

The turbidity other than of natural origin to exceed 5 Jackson Turbidity Units (JTU). Whenever the receiving water is greater than 5 JTU, due to conditions other than those caused by man, then no discharge and/or activity either alone or in combination with other wastewater or activity shall cause an increase of more than 5 JTU.

F. Total Dissolved Gas

The total concentration of dissolved gas shall not exceed 110 percent of saturation at atmospheric pressure at the point of sample collection due to non-natural causes. (In compliance with this standard Paragraph C, Section III, General Requirements shall apply.)

IX. SPECIFIC WATER QUALITY STANDARDS FOR CLASS E WATERS

Specific water quality standards contained herein under Section VIII shall apply to all Class E waters except as enumerated in this Section.

A. No wastewater shall be discharged and/or no activity shall be conducted which either alone or in combination with other wastewaters will cause the organism concentration of the coliform group in waters of the South Fork Coeur d'Alene River, Mullan to Enaville, or Paradise Creek, upper reaches to State line.

1. The <u>total coliform</u> concentrations where associated with a fecal source(s) to exceed a geometric mean of 240/100 ml., nor shall more than 20 percent of total samples during any 30-day period exceed 1000/100 ml. (as determined by multiple-tube fermentation or membrane filter procedures and based on not less than 5 samples for any 30-day period); or greater than 2400/100 ml. for any single sample.

2. The <u>fecal coliform</u> concentrations to exceed a geometric mean of 50/100 ml., nor shall more than 10 percent of total samples during any 30-day period exceed 200/100 ml.; or greater than 500/100 ml. for any single sample.

B. No wastewaters shall be discharged and/or no activity shall be conducted which either alone or in combination with other wastewaters will cause the DO concentration to be less than 75 percent of saturation in waters of Paradise Creek, upper reaches to the State line.

The states are responsible for the monitoring of and reporting data for interstate streams which include most tributaries to the major rivers.

3. PARAMETRIC COVERAGE:

The parametric coverage for the stations in the NWQSS network is shown on Table 2. At the present time there is some discrepancy among the various agencies' parametric coverage; however, negotiations are presently underway to develop a uniform parameter package. Station parameters covered by this report include a selection of those constituents which are, 1. considered significant in ambient station analysis and/or, 2. collected at each NWQSS station in the river basin under consideration.

4. REGION 10 WATER QUALITY CRITERIA:

Parameter	Criteria Level/Units	Environmental Impact and Reference
Temperature	20°C (68°F) MAX	To protect growth and migration routes of salmonids (Federal Water Pollution Control Administration (FWPCA), Water Quality Criteria, 1968).
Dissolved Oxygen	6 mg/l MIN 90% SAT MIN	For good growth and the general well-being of trout, salmon, and other species of cold water aquatic life, DO concentrations should not be below 6 mg/l (FWPCA, Water Quality Criteria, 1968). In addition, state water quality standards normally require 90% saturation for dissolved oxygen (Idaho and Oregon).
Dissolved Gas	110% SAT MAX	To prevent fish fatalities by "gas bubble disease", in which dissolved gases in their circulatory system come out of solution to form bubbles (emboli), which block the flow of blood through the capillary vessels (Environmental Protection Agency, Quality Criteria for Water, 1976).

Parameter	Criteria Level/Units	Environmental Impact and Reference
pH	6.5 MIN 8.5 MAX	The pH range of 5 to 9 is not directly lethal to fish. However, the toxicity of several common pollutants is markedly affected by pH changes within this range, and increasing acidity or alkalinity may make these poisons more toxic. Therefore, a pH range of 6.5 to 9.0 is desirable to protect freshwater aquatic life (EPA, Quality Criteria for Water, 1976). In primary contact recreation waters, the pH should be within the range of 6.5-8.3 (except when due to natural causes) to prevent the possibilities of eye irritations in humans (FWPCA, Water Quality Criteria, 1968). State pH standards range from 6.5 to 9.0 for Idaho and 6.5 to 8.5 for Oregon and Washington. In light of the above information, our criteria has been set at 6.5 to 8.5.
Turbidity	25 JTU MAX	Most state standards have a turbidity standard of "not to exceed 5 JTU over background or natural conditions". This is rather ambiguous as to what "background or natural conditions" are. Also, this type of standard does not relate to the fishable/swimmable concept. Excessive turbidity reduces photosynthesis by aquatic plant life and damages the spawning grounds of fish and habitat of aquatic invertebrates. Buck (1956) observed that maximum production in hatchery ponds and reservoirs occurred where the average turbidity was less than 25 JTU (FWPCA, Water Quality Criteria, 1968).

Parameter	Criteria Level/Units	Environmental Impact and Reference
Phosphorus	Total 0.05 mg/l-P Total 0.15 mg/l-PO_4 Ortho 0.025 mg/l-P Ortho 0.075 mg/l-PO_4 Diss. Ortho 0.01 mg/l-P	Limited studies made to date indicate that different species of algae have somewhat different phosphorus requirements, with the range of available phosphorus usually falling between 0.01 and 0.05 mg/l as P. At these levels, when other conditions are favorable, blooms may be expected. While there is no set relationship between total and available phosphorus (because the ratio varies with season, temperature, and plant growth), the total phosphorus is governing, as the reservoir supplies the available phosphorus. A desirable guideline for total phosphorus is 0.05 mg/l as P where streams enter lakes or reservoirs (FWPCA, Water Quality Criteria, 1968). The other criteria levels for different units and forms of phosphorus have been determined by unit conversion and relationships found between the phosphorus forms in Region 10. The other forms of phosphorus are used only as indicators when data for total phosphorus is lacking.
Nitrate Nitrogen	0.30 mg/l-N 1.33 mg/l-NO_3	Mackenthum (1965) cited results indicating that inorganic nitrogen at 0.30 mg/l and inorganic phosphorus at 0.01 mg/l, at the start of an active growing season, subsequently permitted algal blooms (FWPCA, Water Quality Criteria, 1968).
Ammonia Nitrogen	Unionized 0.02 mg/l-N Total 0.20 mg/l-N Total 0.26 mg/l-NH_4	The amount of unionized ammonia is very much dependent upon pH, temperature, and concentration of total ammonia. A maximum level of 0.02 mg/l as unionized ammonia is recommended to minimize toxicity to freshwater aquatic life (EPA, Quality Criteria for Water, 1976). Concentrations of total ammonia above 0.20 mg/l as N are indicative of organic pollution (Klein, River Pollution 1., Chemical Analysis, 1959).

Parameter	Criteria Level/Units	Environmental Impact and Reference
Bacteria	Total Coliform 1000/100 ml Fecal Coliform 240/100 ml	Total and fecal coliform are microbiological indicators used to determine or indicate the safety of water for drinking, swimming, and shellfish harvesting. A fecal coliform log mean of 200 per 100 ml for bathing waters and 14 per 100 ml for shellfish harvesting waters is recommended by Quality Criteria for Water, EPA, 1976. State standards range from 240 total/50 fecal per 100 ml for primary contact recreation in Idaho, 1000 total per 100 ml in Oregon for general beneficial use, and 1000 total per 100 ml in Washington for Class B general recreation. From the above discussion, the suggested criteria level based on general recreation is 1000 per 100 ml for total coliform and 240 per 100 ml for fecal coliform.
Dissolved Solids Conductivity	TDS 500 mg/l Cond. 750 umho/cm	High levels of dissolved solids are a hazard for irrigation water. A maximum level of 500 mg/l is indicated for water from which no detrimental effects will usually be noticed. For domestic water supply, the maximum level is 250 mg/l (EPA, Quality Criteria for Water, 1976). A relationship exists between dissolved solids and conductivity where total dissolved solids = .6 to .8 times the conductivity.
Boron	750 ug/l	For long term irrigation, a maximum level of 750 ug/l is recommended for sensitive crops (EPA, Quality Criteria for Water, 1976).

Parameter	Criteria Level/Units	Environmental Impact and Reference
Benthic Invertebrate Biomass	--	Is a measure of the standing crops of the benthic fauna. Typical responses of the standing crop to environmental stress are: Stress — Standing Crop Response Toxic Substance — Reduce Severe Temperature Alterations — Variable Silt — Reduce Inorganic Nutrients — Increase Organic Nutrients (high O_2 demand) — Increase (EPA Biological Field and Laboratory Methods, 1973.)
Chlorophyll a	3 mg/l 3-20 mg/l 20 mg/l	Oligotrophic Mesotrophic Eutrophic (Vollenweider, Dr. R.A., Water Management Research, Scientific Fundamentals of the Eutrophication of Lakes and Flowing Waters with Particular Reference to Nitrogen and Phosphorus as Factors in Eutrophication, DAS/CSI/68.27).
Species Diversity	<1 polluted 1-3 moderate pollution >3 unpolluted	The species diversity index reflects the response of the benthic macroinvertebrate community to pollutional stress (Wilhelm 1970).

Heavy Metals Toxicity

Metal	Criteria Level	Environmental Impact	Reference
Cadmium	30 ug/l	Aquatic life protected in hard water	1
	3 ug/l	Eggs and larvae of salmon in hard water	
Chromium	50 ug/l	Mixed aquatic populations protected	1
Copper	20 ug/l	96 hour TL_{50} to Chinook salmon in soft water was 31 ug/l at hatch and 18 ug/l at 1 month old	2
Lead	30 ug/l	Aquatic life protected	1
Mercury	0.2 ug/l	Selected species of fish and predatory aquatic organisms protected	1
Zinc	100 ug/l	96 hour TL_{50} to Chinook salmon in soft water at 1 month old	2
	80 ug/l	Algalcidal concentration for Selenastrum Capriconutum	3

References:

1. EPA R3.73.033, Ecological Research Series, Water Quality Criteria 1972, U.S. Government Printing Office, 1973.

2. EPA, Quality Criteria for Water, 1976.

3. Green, et. al., Report to Region X on the Results of the Spokane River Algal Assays, 1973.

4. Wilhelm, J.L. 1970. "Range of Diversity Index in Benthic Macroinvertebrate Populations" JWPCF, 42(S); R221-R224.

Pesticide Toxicity

The following criteria levels are recommended to protect the freshwater aquatic life (EPA, Quality Criteria for Water, 1976).

Pesticide	Criteria Level
Aldrin	.003 ug/1
Dieldrin	.003 ug/1
Chlordane	.010 ug/1
DDT	.001 ug/1
Endrin	.004 ug/1
Heptachlor	.001 ug/1
Lindane	.010 ug/1
Malathion	.100 ug/1
Parathion	.040 ug/1