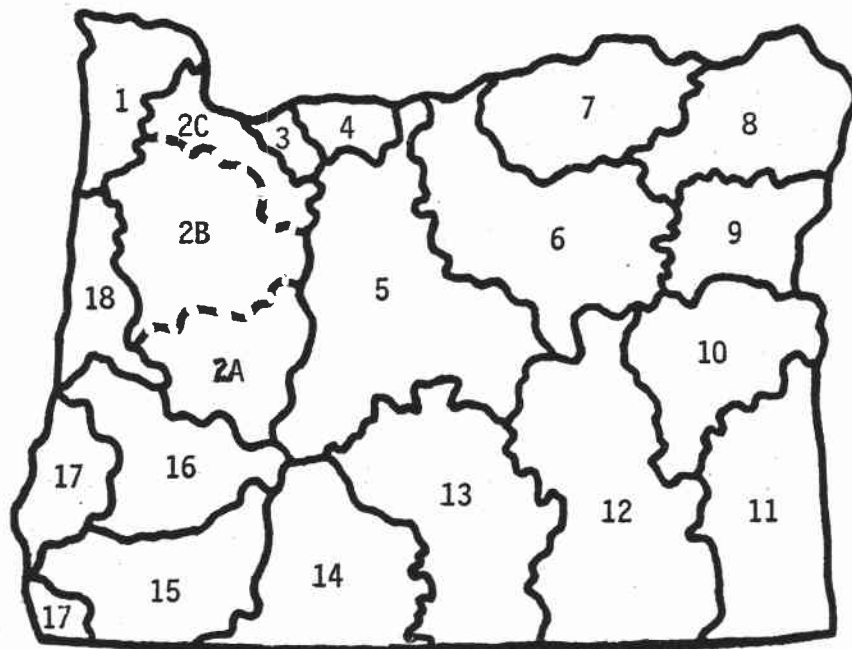


A RESOURCE SURVEY OF RIVER ENERGY
AND LOW-HEAD HYDROELECTRIC POWER POTENTIAL
IN OREGON

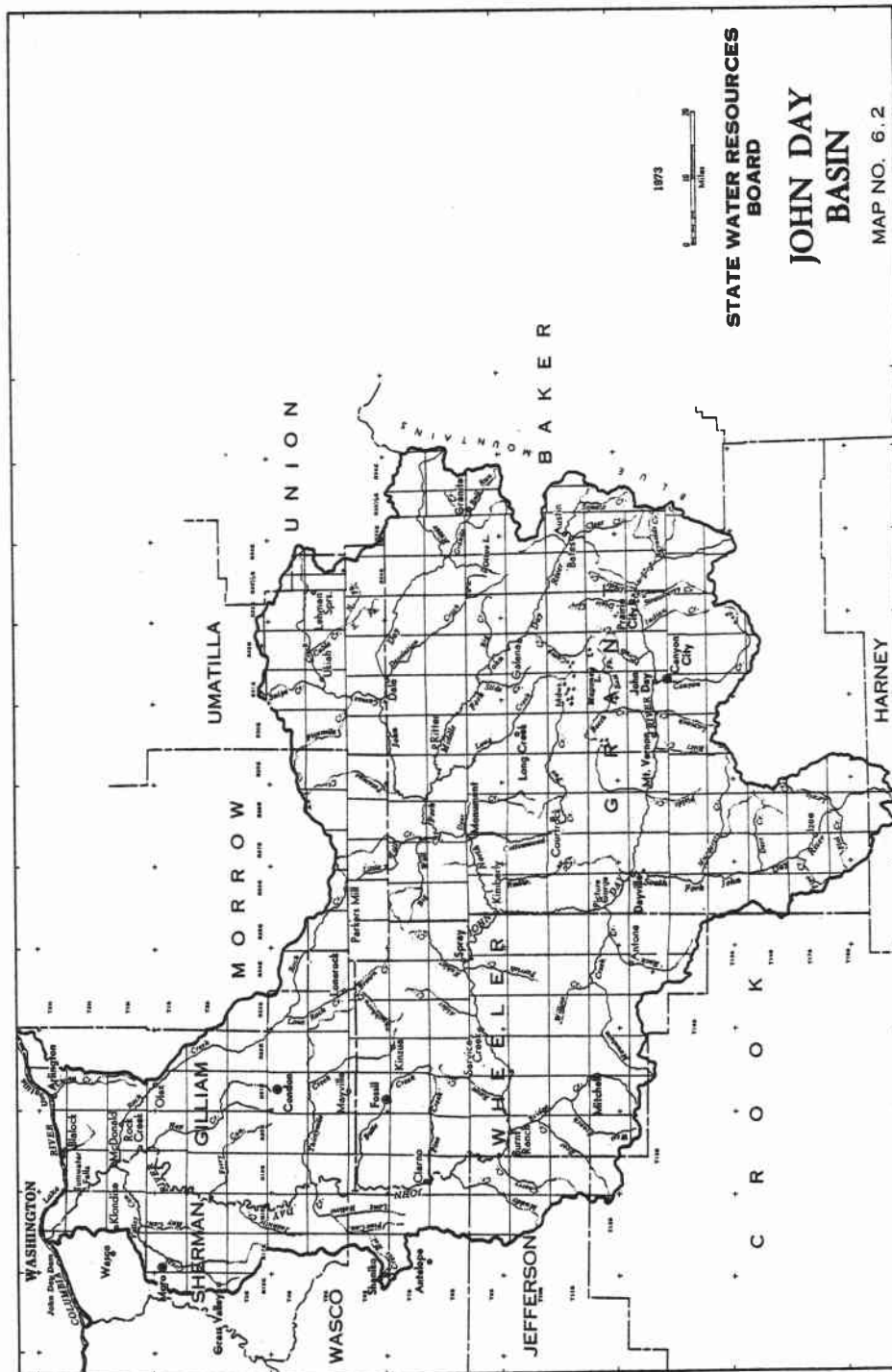
APPENDIX 6: JOHN DAY BASIN



WATER RESOURCES RESEARCH INSTITUTE
Oregon State University
Corvallis, Oregon 97331

INDEX TO APPENDIX 6, JOHN DAY BASIN

Drainage Basin Map	6-ii
Reach Hydro Potential Characteristics Sheets	
John Day River Main Stem	6- 1-2, 6-18, 35-37, 40-44
Rock Creek	6-3 to 6-5
North Fork John Day River & Tribs.	6-19 to 6-34
South Fork John Day River	6-38 to 6-39
Reach Feasibility Analysis Sheets	6-45 to 6-48



1973

STATE WATER RESOURCES
BOARD

JOHN DAY
BASIN

MAP NO. 6.2

REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0001

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 33, T3N, R18E
D. Latitude, Longitude	45°41'N, 120°34'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	0.0 to 10.5

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

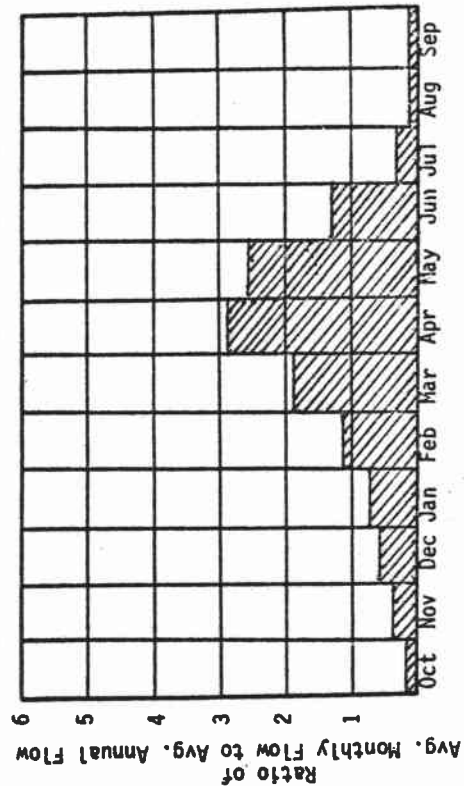
A. Upstream Elevation of Reach	270	Ft. MSL
B. Downstream Elevation of Reach	147	Ft. MSL
C. Total Available Head in Reach	123	Ft.
D. Average Slope in Reach	11.7	Ft./Mi.
E. Drainage Area above Reach Mouth	7133	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I I
I 95 I	I 230.9 I	I 2.41 I	I 21.08 I	I 1.000 I
I 80 I	I 532.2 I	I 5.55 I	I 45.16 I	I .929 I
I 50 I	I 1165.7 I	I 12.15 I	I 82.76 I	I .777 I
I 30 I	I 2720.4 I	I 28.36 I	I 139.54 I	I .562 I
I 10 I	I 6168.3 I	I 64.30 I	I 202.51 I	I .360 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 2236 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0002

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 4, T2N, R19E
D. Latitude, Longitude	45°37'N, 120°27'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	10.5 to 21.6

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	396	Ft. MSL
B. Downstream Elevation of Reach	270	Ft. MSL
C. Total Available Head in Reach	126	Ft.
D. Average Slope in Reach	11.3'	Ft./Mi.
E. Drainage Area above Reach Mouth	7075.6	Sq. Mi.
F. Inflow Classification	Natural	

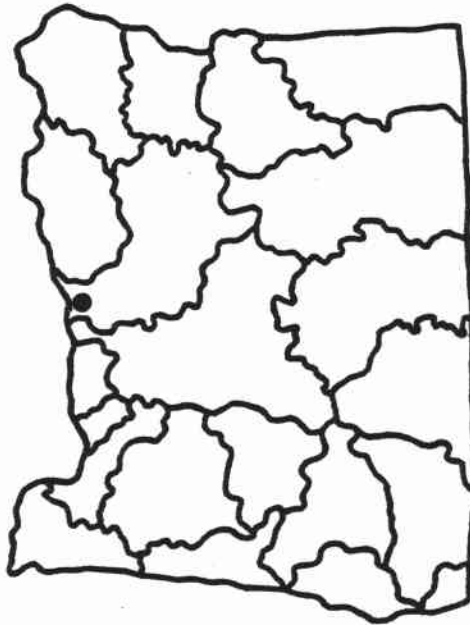
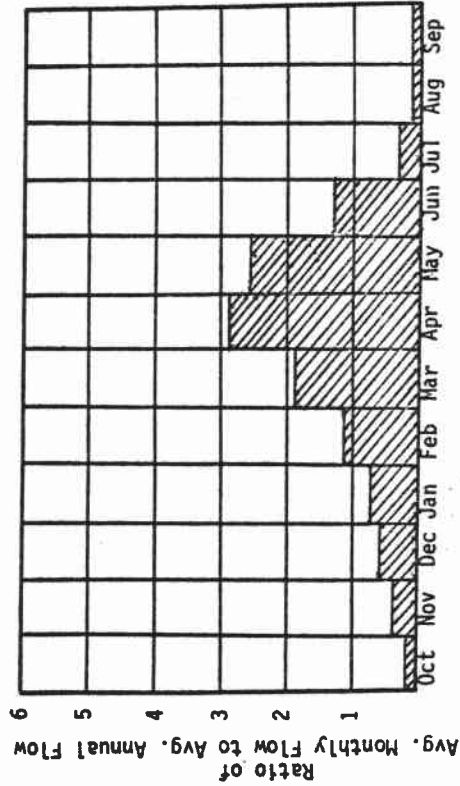
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS

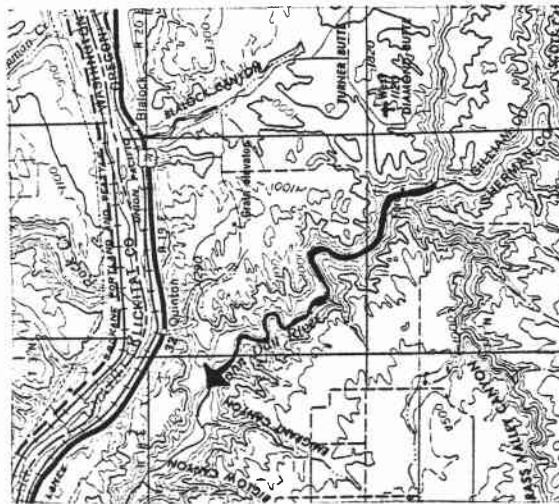
I EXCEEDANCE I DISCHARGE I THEORETICAL I ANNUAL ENERGY I PLANT I	I PERCENTAGE I CFS I PLANT SIZE I AVAILABLE I FACTOR I	I I I MW I GWI I I
I 95 I	I 228.5 I	I 2.13 I 18.66 I 1.000 I
I 80 I	I 527.3 I	I 4.92 I 40.01 I .929 I
I 50 I	I 1156.6 I	I 10.78 I 73.41 I .777 I
I 30 I	I 2700.4 I	I 25.17 I 123.84 I .562 I
I 10 I	I 6128.2 I	I 57.13 I 179.82 I .359 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 2222 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-020-000-R0001

I. LOCATION

A. State	Oregon
B. County	Gilliam
C. Township, Range	Sec. 16, T1N, R10E
D. Latitude, Longitude	45°34'N, 120°17'W
E. Stream Name	Rock Creek
F. Major Basin Name	John Day
G. River Mile	0.0 to 10.5

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	782	Ft. MSL
B. Downstream Elevation of Reach	396	Ft. MSL
C. Total Available Head in Reach	386	Ft.
D. Average Slope in Reach	36.8	Ft./Mi.
E. Drainage Area above Reach Mouth	506.7	Sq. Mi.
F. Inflow Classification	Natural	

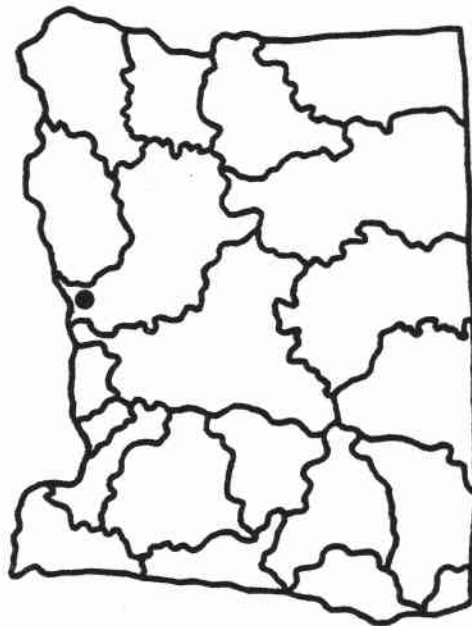
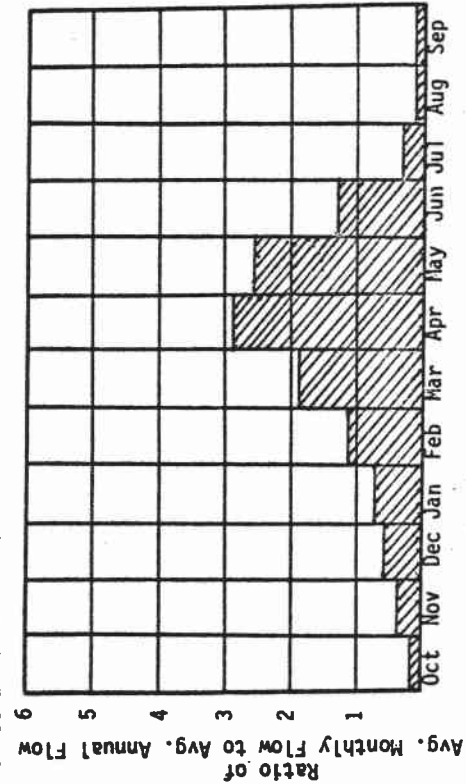
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS

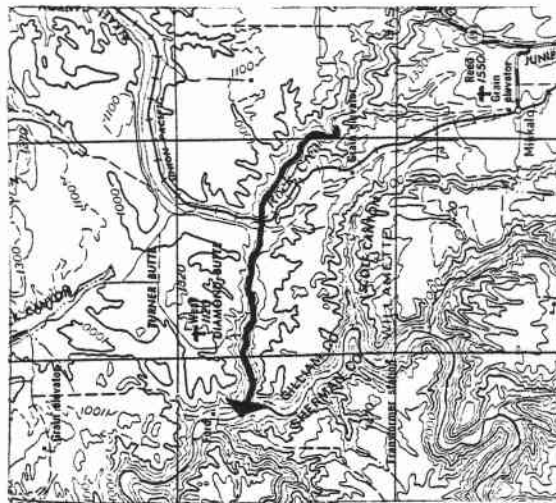
I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 3.0 I	I .10 I	I .85 I	I 1.000 I
I 80 I	I 10.5 I	I .34 I	I 2.75 I	I .910 I
I 50 I	I 41.4 I	I 1.35 I	I 8.49 I	I .716 I
I 30 I	I 117.9 I	I 3.86 I	I 17.26 I	I .511 I
I 10 I	I 386.7 I	I 12.65 I	I 32.67 I	I .295 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 140 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-020-000-R0002

I. LOCATION

A. State	Oregon
B. County	Gilliam
C. Township, Range	Sec. 10, T1S, R21E
D. Latitude, Longitude	45°30'N, 120°10'W
E. Stream Name	Rock Creek
F. Major Basin Name	John Day
G. River Mile	10.5 to 22.2

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

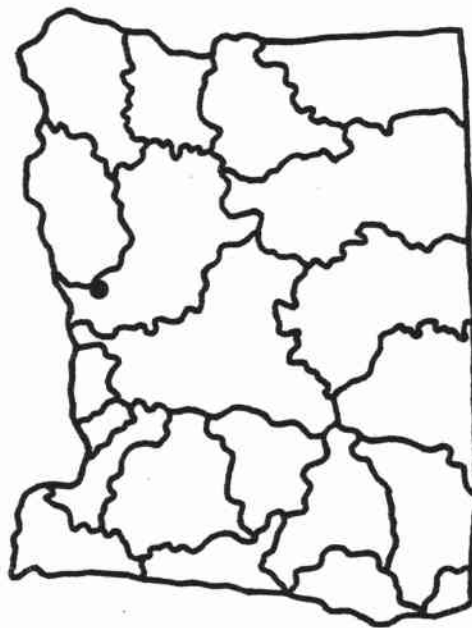
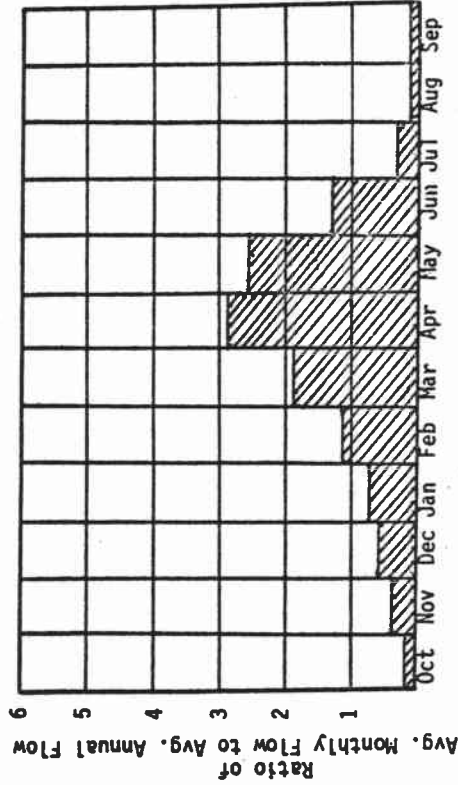
A. Upstream Elevation of Reach	1126	Ft. MSL
B. Downstream Elevation of Reach	782	Ft. MSL
C. Total Available Head in Reach	344	Ft.
D. Average Slope in Reach	29.4	Ft./Mi.
E. Drainage Area above Reach Mouth	469.5	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

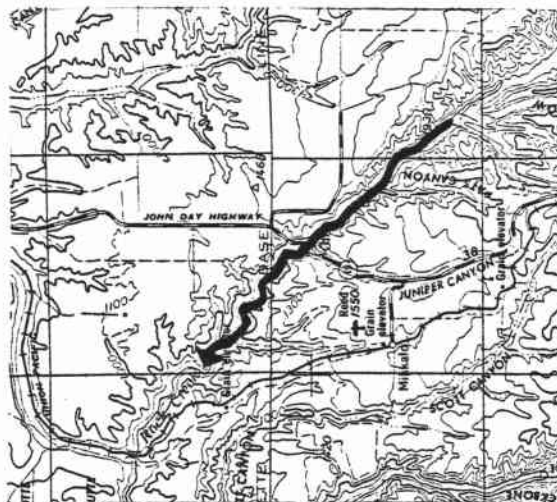
I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95 I	I 2.8 I	I .08 I	I .71 I	I 1.000 I
I 80 I	I 9.8 I	I .29 I	I 2.29 I	I .910 I
I 50 I	I 39.0 I	I 1.14 I	I 7.13 I	I .716 I
I 30 I	I 111.6 I	I 3.25 I	I 14.55 I	I .510 I
I 10 I	I 368.5 I	I 10.74 I	I 27.67 I	I .294 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 134 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-020-000-R0003

I. LOCATION

A. State Oregon
 B. County Gilliam
 C. Township, Range Sec. 26, T4S, R23E
 D. Latitude, Longitude 45°28'N, 120°06'W
 E. Stream Name Rock Creek
 F. Major Basin Name John Day
 G. River Mile 22.2 to H.W.

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach --- Ft. MSL
 B. Downstream Elevation of Reach --- Ft. MSL
 C. Total Available Head in Reach 66 Ft.
 D. Average Slope in Reach --- Ft./Mi.
 E. Drainage Area above Reach Mouth 428.8 Sq. Mi.
 F. Inflow Classification Natural

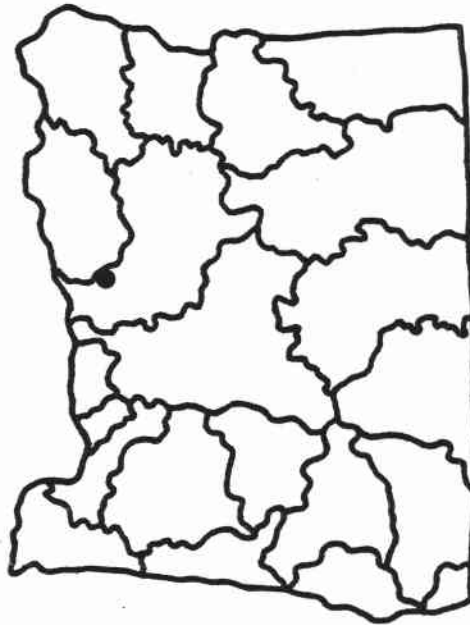
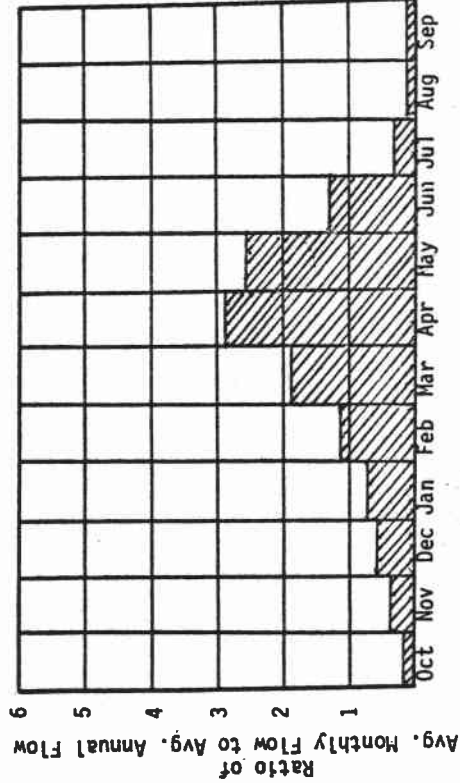
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS

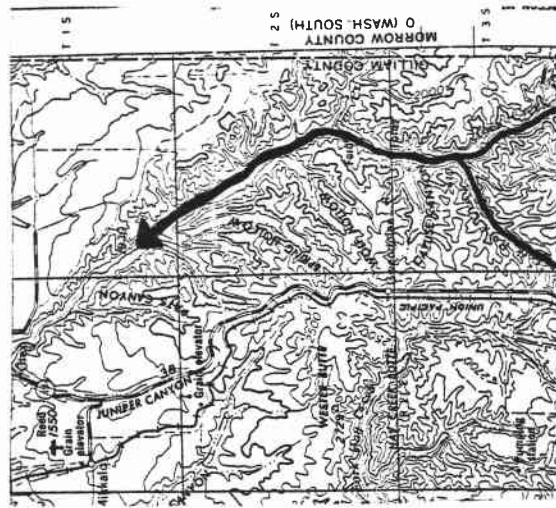
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I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GWH	I	I
I	95	I	2.6	I	.01	I	.13	I	1.000
I	80	I	9.5	I	.05	I	.42	I	.910
I	50	I	37.8	I	.21	I	1.32	I	.715
I	30	I	108.2	I	.61	I	2.70	I	.510
I	10	I	358.5	I	2.01	I	5.16	I	.294

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 130 CFS



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: THE DALLIES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0003

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 24, T1N, R1E
D. Latitude, Longitude	45°32'N, 120°23'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	21.6 to 30.0

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	470	Ft. MSL
B. Downstream Elevation of Reach	396	Ft. MSL
C. Total Available Head in Reach	74	Ft.
D. Average Slope in Reach	8.8	Ft./Mi.
E. Drainage Area above Reach Mouth	6408.6	Sq. Mi.
F. Inflow Classification	Natural	

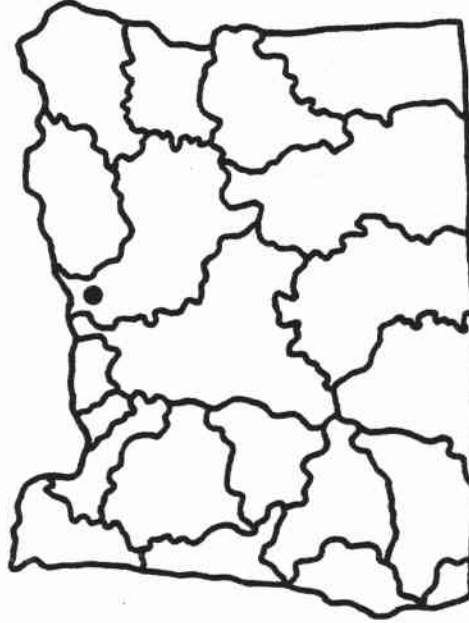
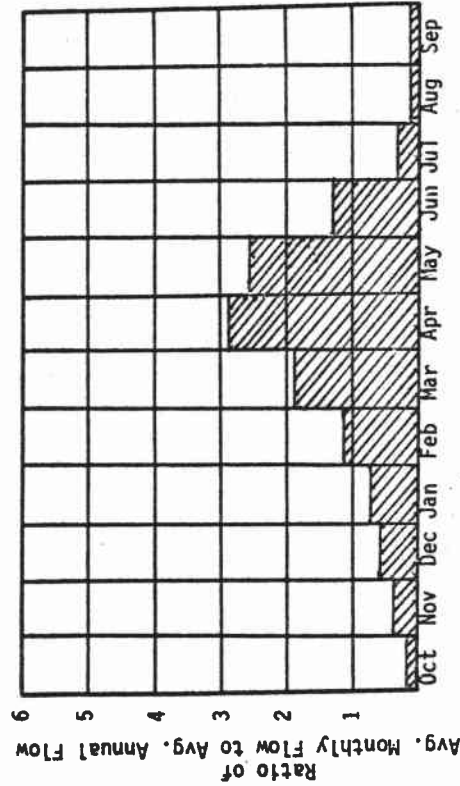
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS

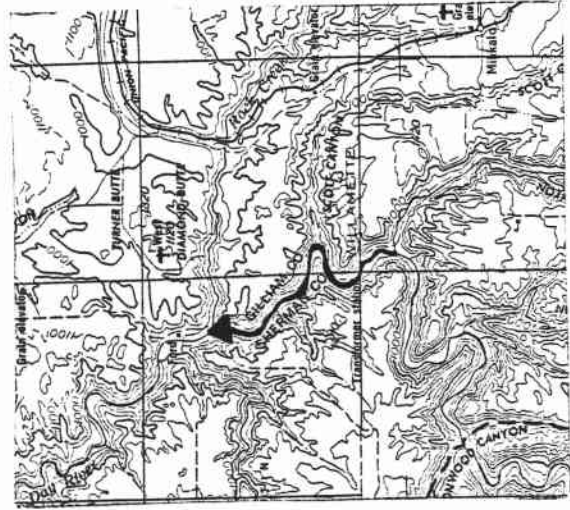
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I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I I	I I	I MW I	I GWH I	I I
I 95	I 204.2	I 1.28	I 11.22	I 1.000
I 80	I 476.4	I 2.99	I 24.30	I .929
I 50	I 1060.7	I 6.65	I 45.17	I .775
I 30	I 2489.3	I 15.61	I 76.56	I .560
I 10	I 5703.7	I 35.77	I 111.87	I .357

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 2068 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0004

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 11, T1S, R1E
D. Latitude, Longitude	45°29'N, 120°25'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	30.0 to 40.0

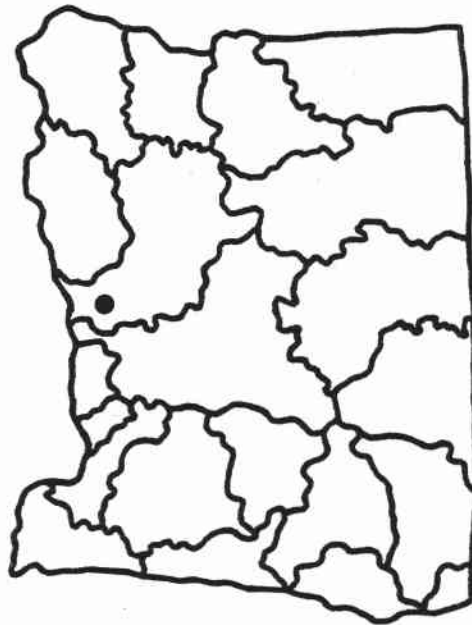
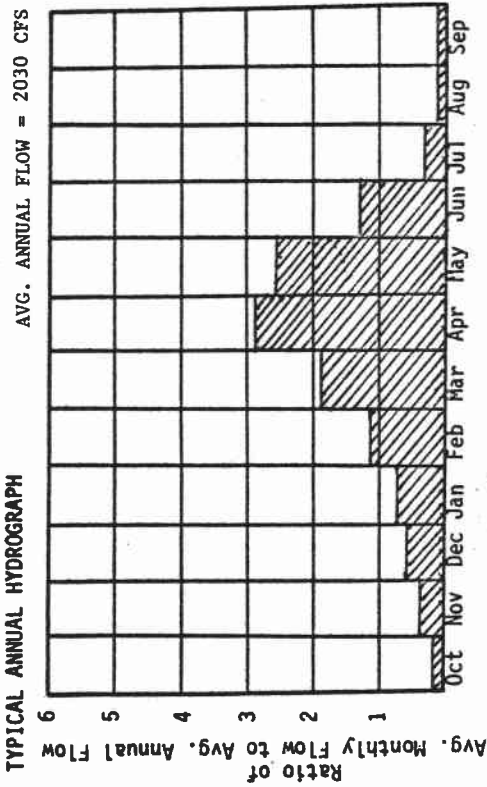
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	540	Ft. MSL
B. Downstream Elevation of Reach	470	Ft. MSL
C. Total Available Head in Reach	70	Ft.
D. Average Slope in Reach	7.0	Ft./Mi.
E. Drainage Area above Reach Mouth	6034	Sq. Mi.
F. Inflow Classification	Natural	

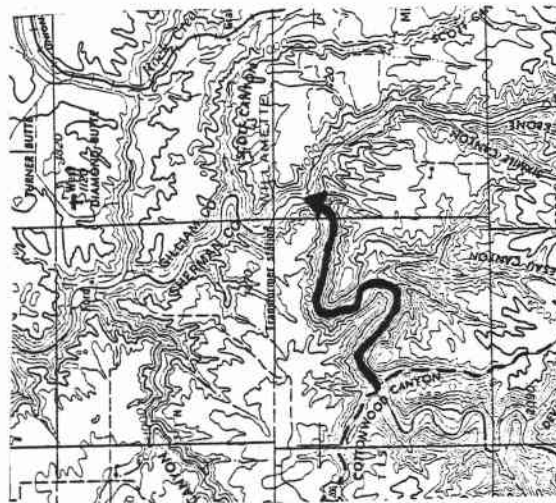
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I I	I I	I MW I	I GWH I	I I
I 95 I	I 198.3 I	I 1.18 I	I 10.31 I	I 1.000 I
I 80 I	I 464.0 I	I 2.75 I	I 22.39 I	I .928 I
I 50 I	I 1037.3 I	I 6.15 I	I 41.75 I	I .775 I
I 30 I	I 2437.7 I	I 14.46 I	I 70.86 I	I .559 I
I 10 I	I 5599.2 I	I 33.22 I	I 103.72 I	I .356 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



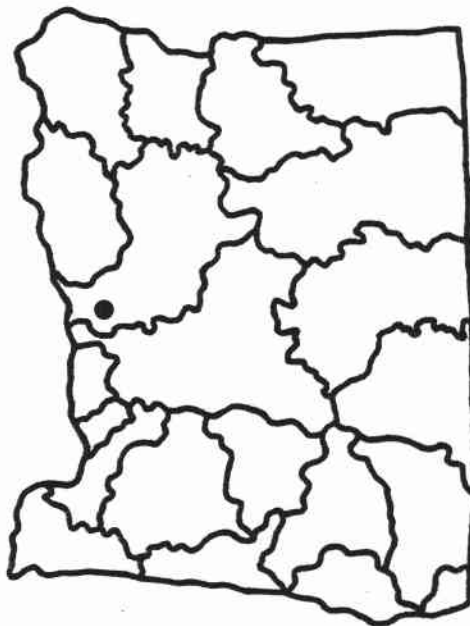
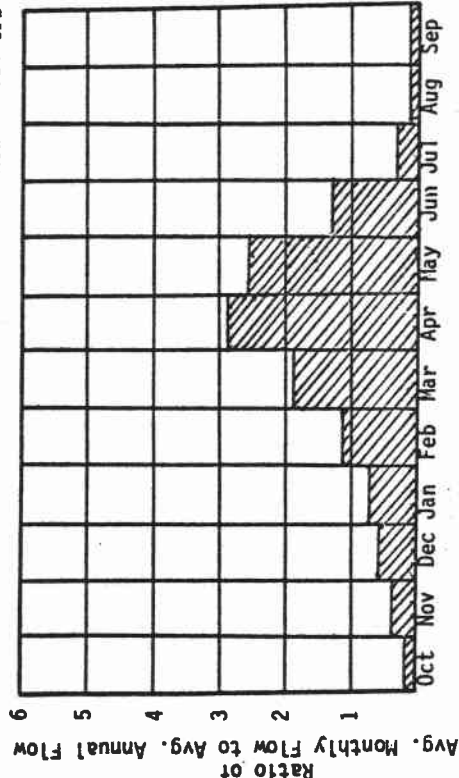
REACH # 02-500-200-000-R0005

A.	State	Oregon
B.	County	Sherman-Gilliam
C.	Township, Range	Sec. 6, T2S, R19E
D.	Latitude, Longitude	45°25'N, 120°30'W
E.	Stream Name	John Day River
F.	Major Basin Name	John Day
G.	River Mile	40.0 to 54.0

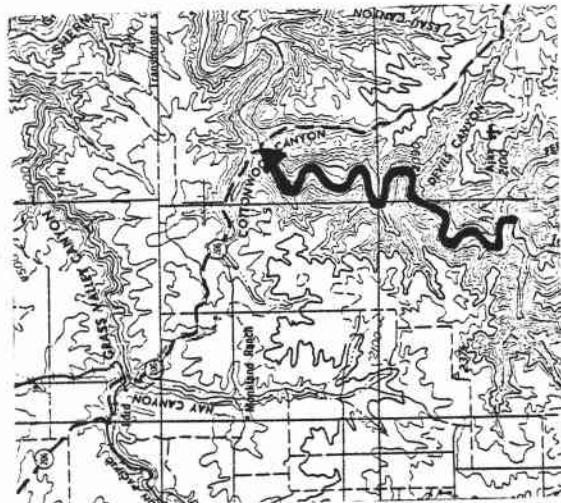
A.	Upstream Elevation of Reach	660	Ft. MSL
B.	Downstream Elevation of Reach	540	Ft. MSL
C.	Total Available Head in Reach	120	Ft.
D.	Average Slope in Reach	8.6	Ft./Mi.
E.	Drainage Area above Reach Mouth	5974	Sq. Mi.
F.	Inflow Classification	Natural	

ENERGY CHARACTERISTICS											
I	EXCEEDANCE	DISCHARGE	THEORETICAL	ANNUAL ENERGY	PLANT	I	EXCEEDANCE	DISCHARGE	THEORETICAL	ANNUAL ENERGY	PLANT
I	PERCENTAGE	CFS	PLANT SIZE	AVAILABLE	FACTOR	I	PERCENTAGE	CFS	PLANT SIZE	AVAILABLE	FACTOR
I	I	I	MW	GMH	I	I	I	I	MW	GMH	I
I	95	I	197.4	I	2.01	I	17.58	I	1,000	I	1,000
I	80	I	462.1	I	4.70	I	38.22	I	.928	I	.928
I	50	I	1033.6	I	10.51	I	71.31	I	.774	I	.774
I	30	I	2429.5	I	24.71	I	121.05	I	.559	I	.559
I	10	I	5582.5	I	56.77	I	177.23	I	.356	I	.356

AVG. ANNUAL FLOW = 2024 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0006

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 11, T3S, R18E
D. Latitude, Longitude	45°18'N, 120°31'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	54.0 to 68.0

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

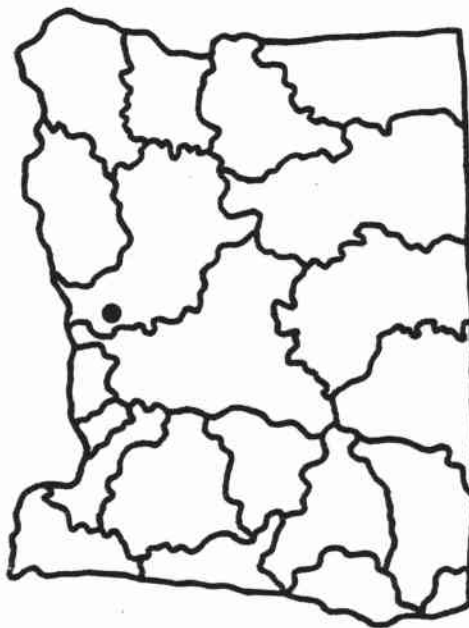
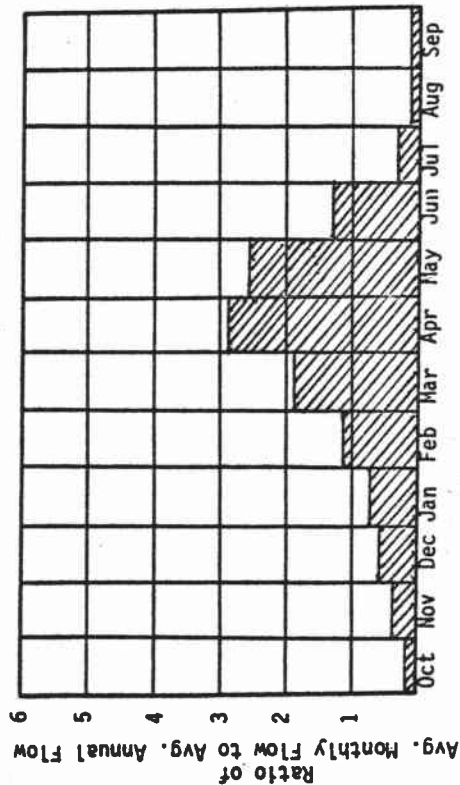
A. Upstream Elevation of Reach	814	Ft. MSL
B. Downstream Elevation of Reach	660	Ft. MSL
C. Total Available Head in Reach	154	Ft.
D. Average Slope in Reach	11.0	Ft./Mi.
E. Drainage Area above Reach Mouth	5944	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

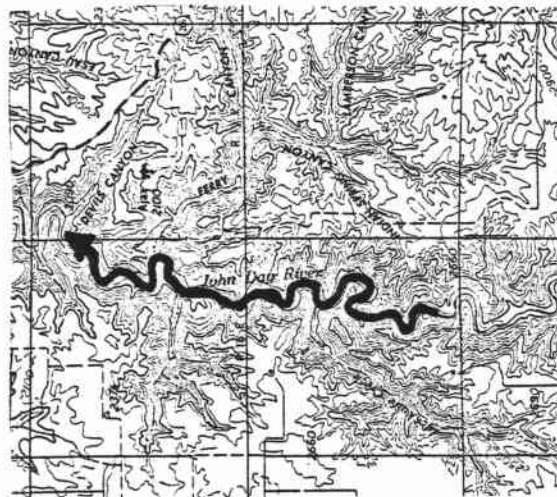
I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 195.0 I	I 2.54 I	I 22.29 I	I 1.000 I
I 80 I	I 457.0 I	I 5.96 I	I 48.50 I	I .928 I
I 50 I	I 1023.9 I	I 13.36 I	I 90.63 I	I .774 I
I 30 I	I 2408.0 I	I 31.43 I	I 153.92 I	I .559 I
I 10 I	I 5538.9 I	I 72.29 I	I 225.51 I	I .356 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 2008 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLIES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-R0007

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 24, T4S, R18W
D. Latitude, Longitude	45°13'N, 120°31'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	68.0 to 84.0

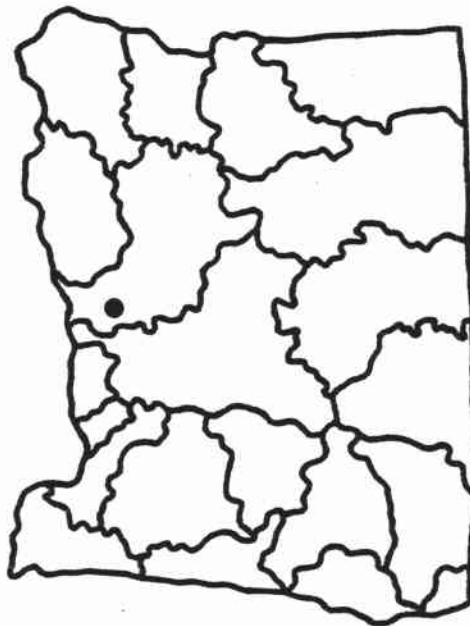
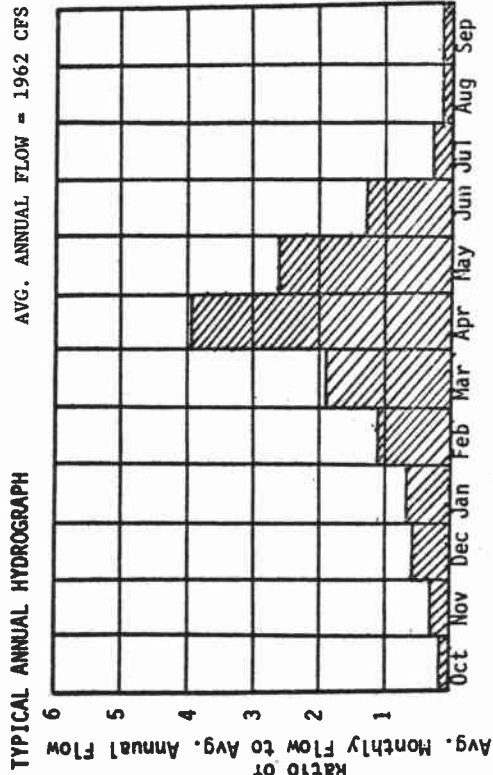
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	985	Ft. MSL
B. Downstream Elevation of Reach	814	Ft. MSL
C. Total Available Head in Reach	171	Ft.
D. Average Slope in Reach	10.7	Ft./Mi.
E. Drainage Area above Reach Mouth	5769.9	Sq.Mi.
F. Inflow Classification	Natural	

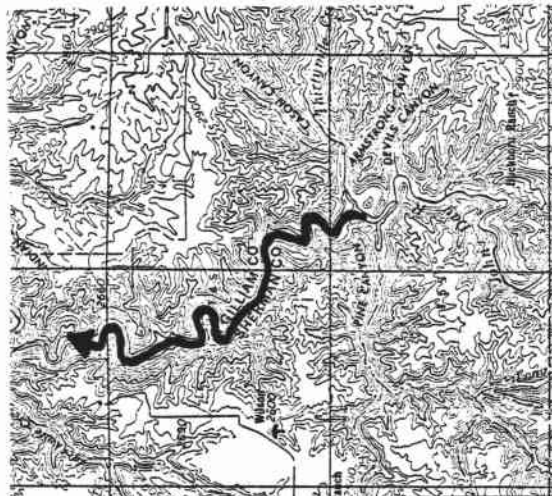
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS				THEORETICAL POTENTIAL			
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY
I	I	I	I	I	PLANT SIZE	I	AVAILABLE
I	I	I	I	I	I	I	I
I	95	I	187.9	I	2.72	I	23.86
I	80	I	442.1	I	6.41	I	52.09
I	50	I	995.4	I	14.43	I	97.75
I	30	I	2345.1	I	33.98	I	166.28
I	10	I	5411.0	I	78.41	I	244.12
						I	1.000
						I	.928
						I	.774
						I	.559
						I	.355

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLIES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-R0008

I. LOCATION

A. State	Oregon
B. County	Sherman-Gilliam
C. Township, Range	Sec. 29, T5S, R19E
D. Latitude, Longitude	45°06'N, 120°28'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	84.0 to 97.3

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

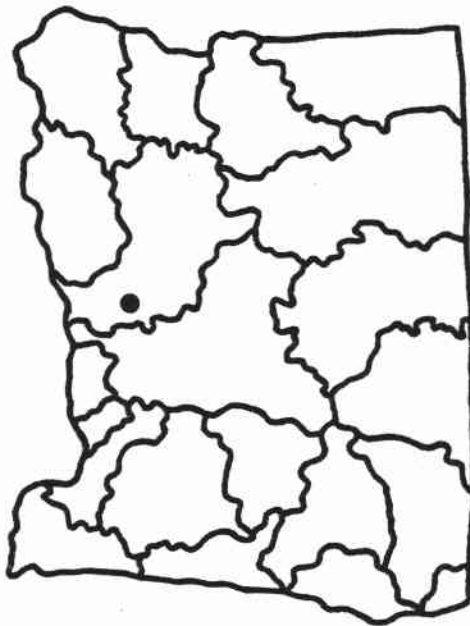
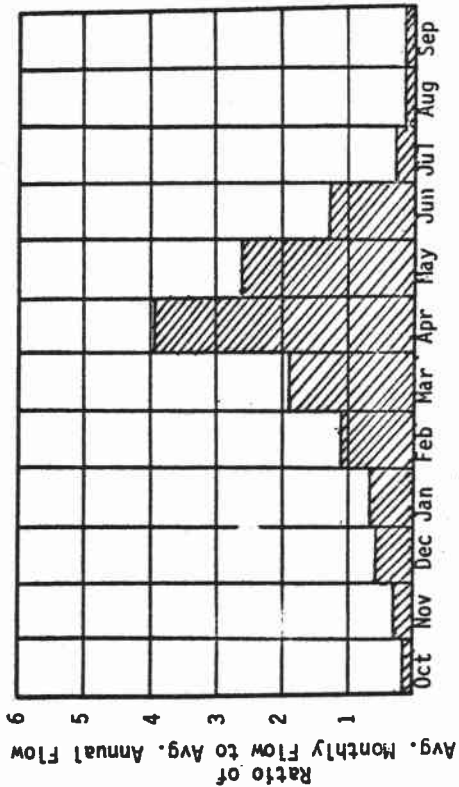
A. Upstream Elevation of Reach	1160	Ft. MSL
B. Downstream Elevation of Reach	985	Ft. MSL
C. Total Available Head in Reach	175	Ft.
D. Average Slope in Reach	13.2	Ft./Mi.
E. Drainage Area above Reach Mouth	5472.3	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

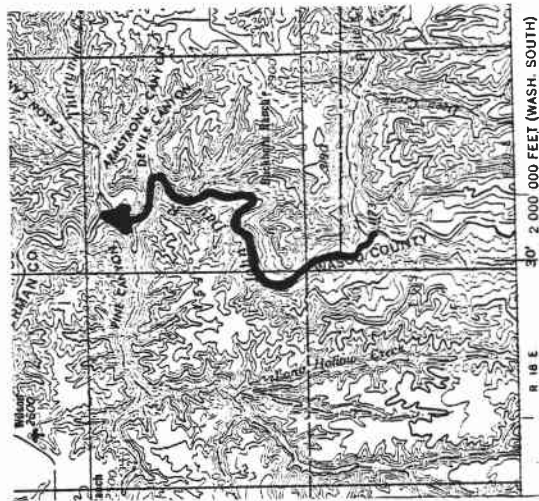
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GWH	I	I
I	95	I	176.7	I	2.62	I	22.95	I	1.000
I	80	I	418.1	I	6.20	I	50.40	I	.928
I	50	I	949.3	I	14.08	I	95.26	I	.772
I	30	I	2242.8	I	33.26	I	162.47	I	.558
I	10	I	5202.2	I	77.15	I	239.37	I	.354

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1886 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLIES



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0009

I. LOCATION

A. State	Oregon
B. County	Wasco-Wheeler
C. Township, Range	Sec. 8, T7S, R19E
D. Latitude, Longitude	44° 58' N, 128° 28' W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	97.3 to 111.7

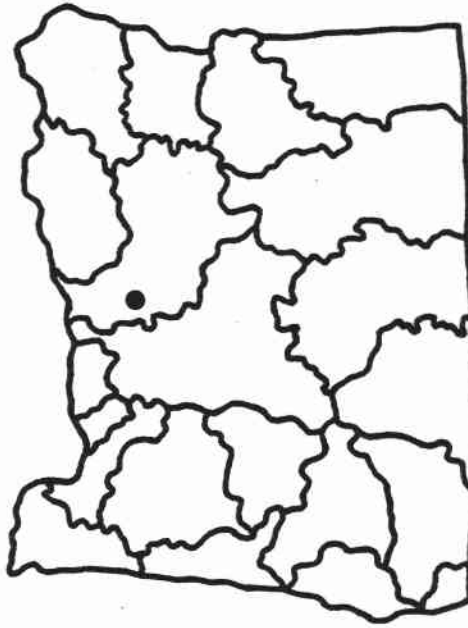
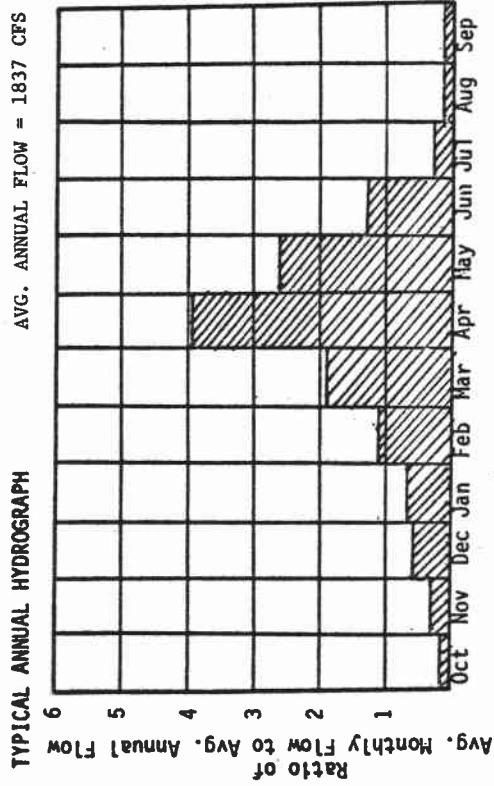
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	1298	Ft. MSL
B. Downstream Elevation of Reach	1160	Ft. MSL
C. Total Available Head in Reach	138	Ft.
D. Average Slope in Reach	9.6	Ft./Mi.
E. Drainage Area above Reach Mouth	5117.1	Sq. Mi.
F. Inflow Classification	Natural	

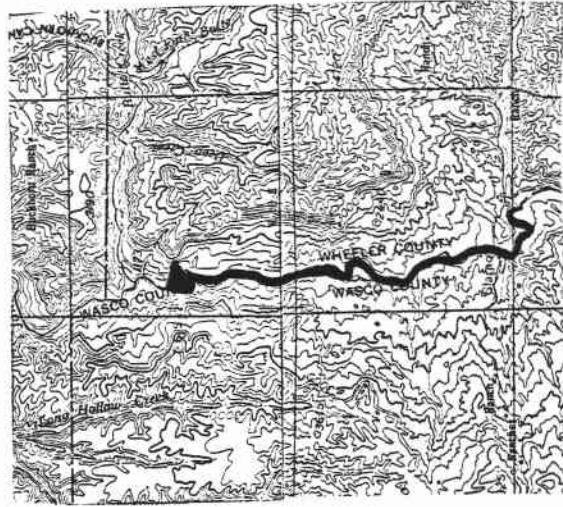
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS									
I	EXCEEDANCE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	PERCENTAGE	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GMH	I	I
I	95	I	169.6	I	1.98	I	17.37	I	1.000
I	80	I	402.9	I	4.71	I	38.29	I	.928
I	50	I	919.8	I	10.76	I	72.71	I	.772
I	30	I	2177.2	I	25.46	I	124.24	I	.557
I	10	I	5067.7	I	59.27	I	183.46	I	.353

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: THE DALLES-BEND



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0010

I. LOCATION

A. State	Oregon
B. County	Wasco-Wheeler
C. Township, Range	Sec. 21, T8S, R19E
D. Latitude, Longitude	44° 52' N, 120° 25' W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	111.7 to 120.0

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

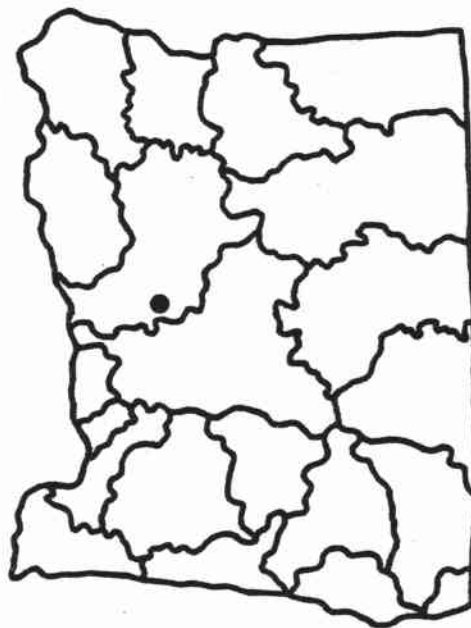
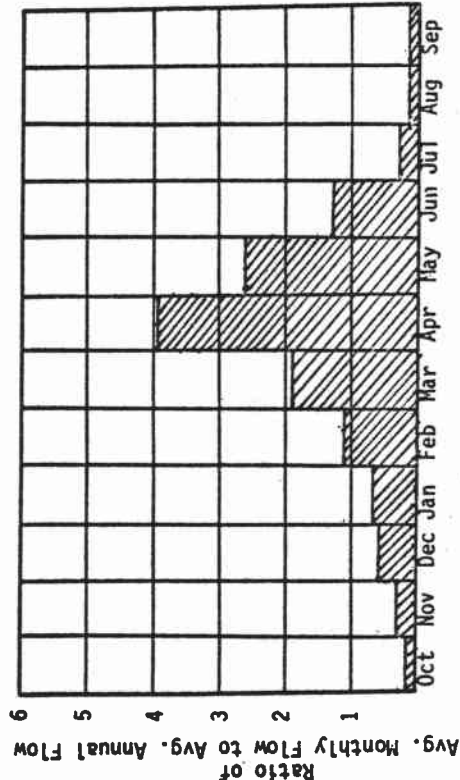
A. Upstream Elevation of Reach	1338	Ft. MSL
B. Downstream Elevation of Reach	1298	Ft. MSL
C. Total Available Head in Reach	40	Ft.
D. Average Slope in Reach	4.8	Ft./Mi.
E. Drainage Area above Reach Mouth	5044.5	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GW	I	I
I	95	I	164.9	I	.56	I	4.90	I	1.000
I	80	I	392.9	I	1.33	I	10.82	I	.927
I	50	I	900.3	I	3.05	I	20.61	I	.771
I	30	I	2133.7	I	7.23	I	35.27	I	.557
I	10	I	4978.4	I	16.88	I	52.16	I	.353

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1804 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BEND



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0011

I. LOCATION

A. State	Oregon
B. County	Jefferson-Wheeler
C. Township, Range	Sec. 24, T9S, R19E
D. Latitude, Longitude	44°46'N, 120°24'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	120.0 to 135.3

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	1474	Ft. MSL
B. Downstream Elevation of Reach	1338	Ft. MSL
C. Total Available Head in Reach	136	Ft.
D. Average Slope in Reach	8.9	Ft./Mi.
E. Drainage Area above Reach Mouth	4843.3	Sq. Mi.
F. Inflow Classification	Natural	

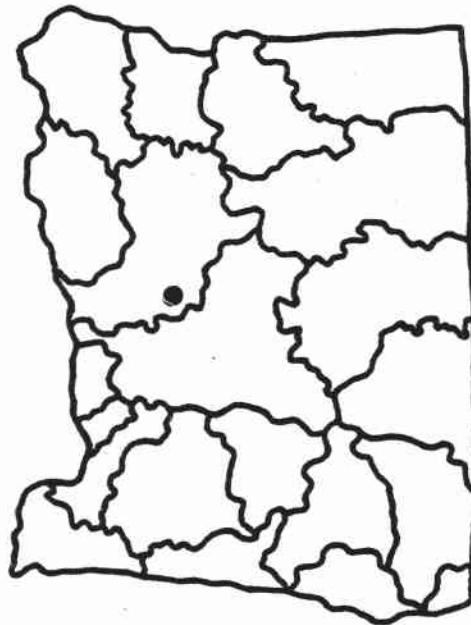
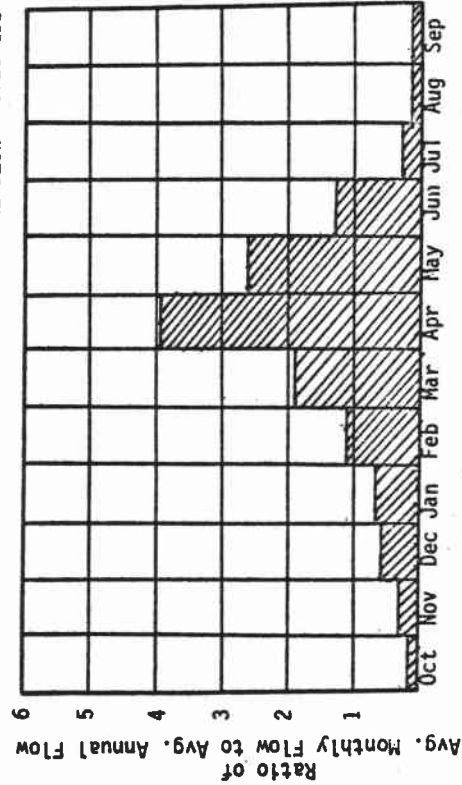
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS

I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GW	I	I
I	95	I	153.9	I	1.77	I	15.54	I	1.000
I	80	I	369.3	I	4.26	I	34.57	I	.927
I	50	I	854.1	I	9.84	I	66.38	I	.770
I	30	I	2030.6	I	23.40	I	113.90	I	.556
I	10	I	4765.5	I	54.92	I	169.12	I	.352

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1728 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BEND



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0012

I. LOCATION

A. State	Oregon
B. County	Wheeler
C. Township, Range	Sec. 32, T9S, R21E
D. Latitude, Longitude	44°45'N, 120°13'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	135.3 to 145.2

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

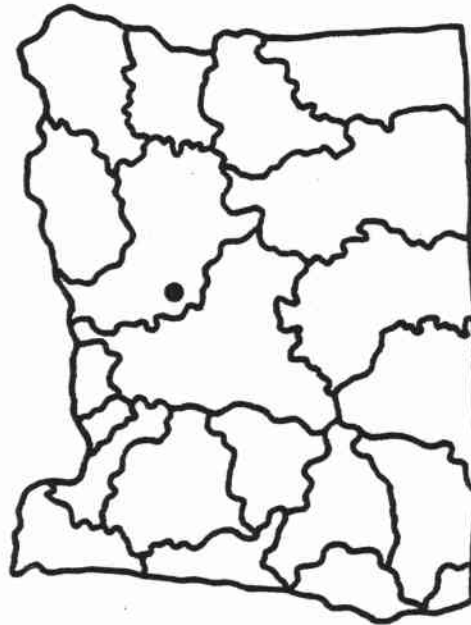
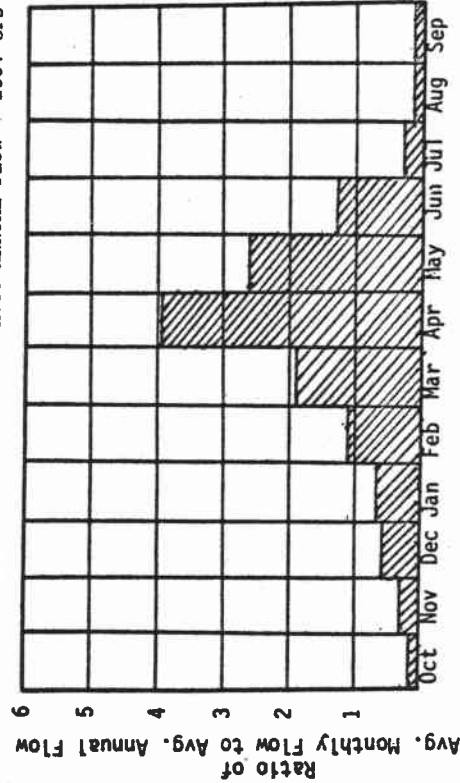
A. Upstream Elevation of Reach	1549	Ft. MSL
B. Downstream Elevation of Reach	1474	Ft. MSL
C. Total Available Head in Reach	75	Ft.
D. Average Slope in Reach	7.6	Ft./Mi.
E. Drainage Area above Reach Mouth	4435.9	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 145.1 I	I .92 I	I 8.08 I	I 1.000 I
I 80 I	I 350.0 I	I 2.22 I	I 18.06 I	I .927 I
I 50 I	I 816.0 I	I 5.19 I	I 34.93 I	I .769 I
I 30 I	I 1945.4 I	I 12.36 I	I 60.08 I	I .555 I
I 10 I	I 4588.6 I	I 29.16 I	I 89.51 I	I .350 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1664 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: REND



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0013

I. LOCATION

A. State	Oregon
B. County	Wheeler
C. Township, Range	Sec. 28, T9S, R22E
D. Latitude, Longitude	44°47'N, 120°05'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	145.2 to 156.7

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

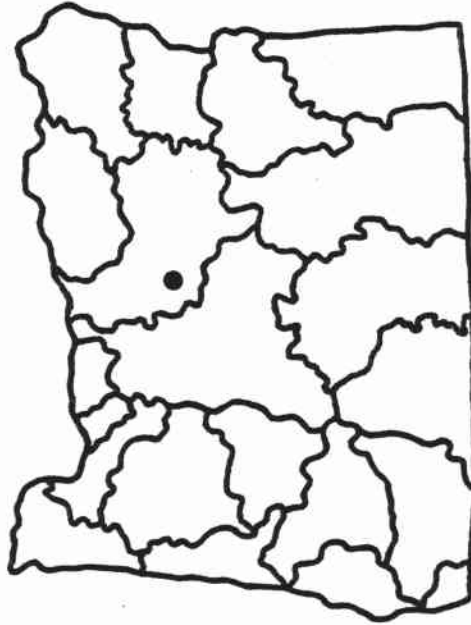
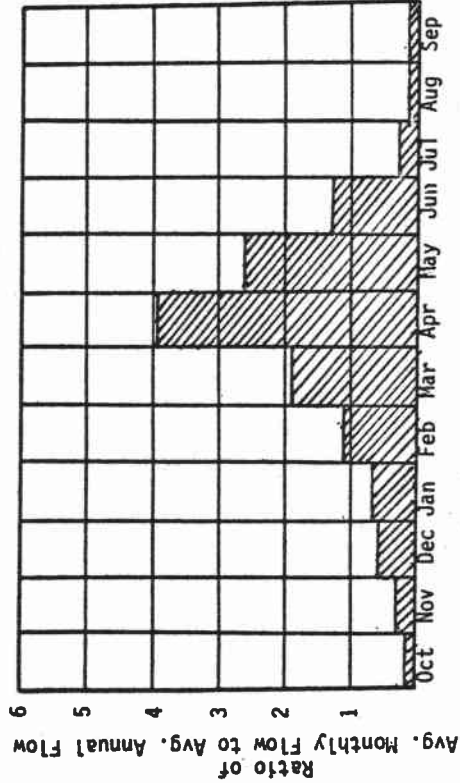
A. Upstream Elevation of Reach	1637	Ft. MSL
B. Downstream Elevation of Reach	1549	Ft. MSL
C. Total Available Head in Reach	88	Ft.
D. Average Slope in Reach	7.6	Ft./Mi.
E. Drainage Area above Reach Mouth	4311.8	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

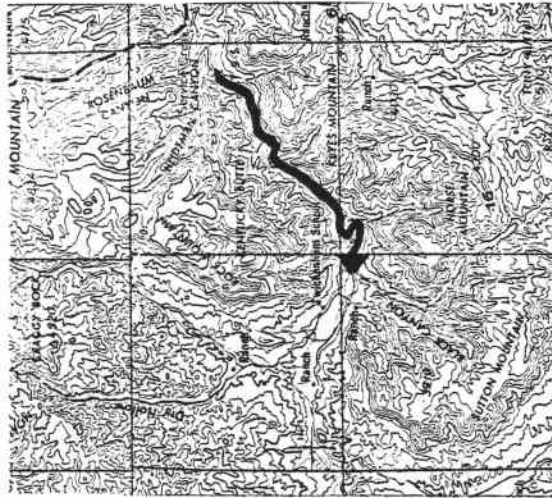
I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 141.6 I	I 1.06 I	I 9.25 I	I 1.000 I
I 80 I	I 342.5 I	I 2.55 I	I 20.74 I	I .927 I
I 50 I	I 801.1 I	I 5.97 I	I 40.21 I	I .768 I
I 30 I	I 1911.9 I	I 14.26 I	I 69.23 I	I .554 I
I 10 I	I 4518.8 I	I 33.70 I	I 103.30 I	I .350 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1638 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BEND



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-R0014

I. LOCATION

A. State	Oregon
B. County	Wheeler
C. Township, Range	Sec. 6, T9S, R24E
D. Latitude, Longitude	44°48'N, 119°53'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	156.7 to 170.7

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

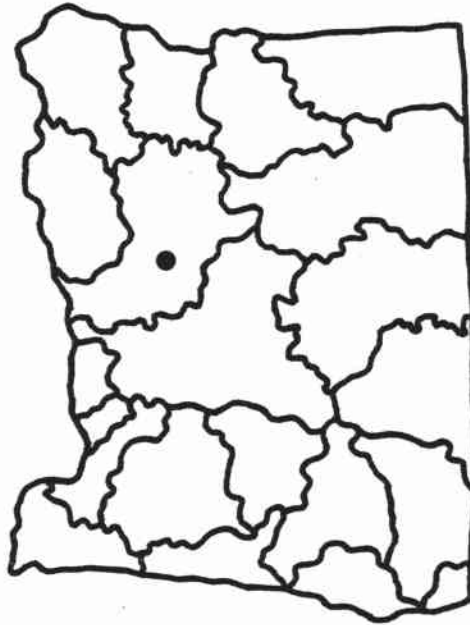
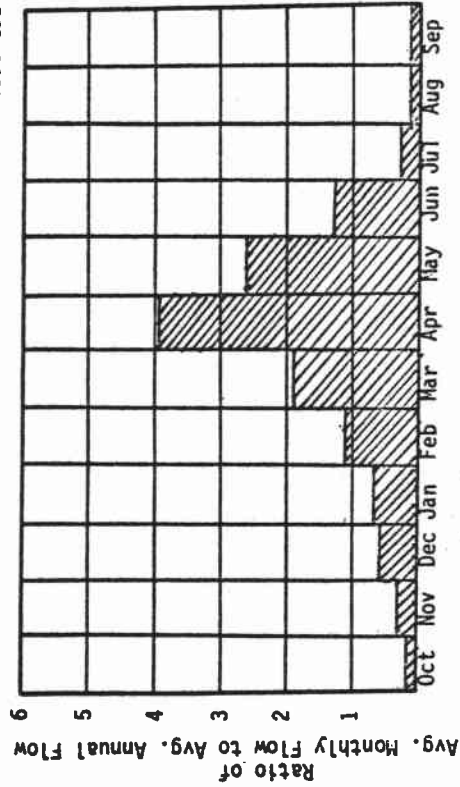
A. Upstream Elevation of Reach	1760	Ft. MSL
B. Downstream Elevation of Reach	1637	Ft. MSL
C. Total Available Head in Reach	123	Ft.
D. Average Slope in Reach	8.8	Ft./Mi.
E. Drainage Area above Reach Mouth	4213.4	Sq. Mi.
F. Inflow Classification	Regulated	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

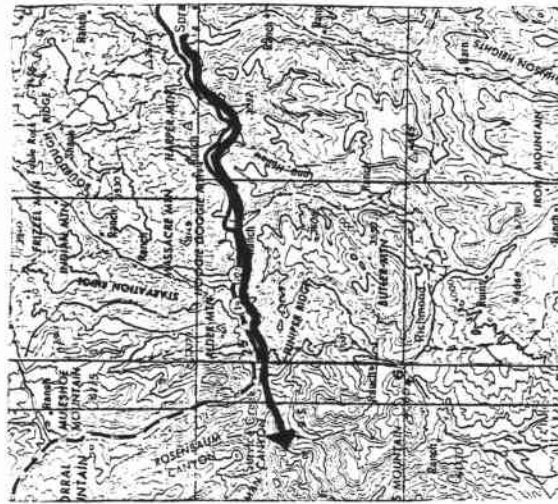
I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 135.3 I	I 1.41 I	I 12.35 I	I 1.000 I
I 80 I	I 328.7 I	I 3.43 I	I 27.80 I	I .926 I
I 50 I	I 773.4 I	I 8.06 I	I 54.20 I	I .767 I
I 30 I	I 1849.7 I	I 19.28 I	I 93.51 I	I .554 I
I 10 I	I 4388.9 I	I 45.75 I	I 139.88 I	I .349 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1590 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BEND-CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-ROOT15

I. LOCATION

A. State	Oregon
B. County	Wheeler
C. Township, Range	Sec. 9, T9S, R25E
D. Latitude, Longitude	44°48'N, 119°43'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	170.7 to 184.7

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

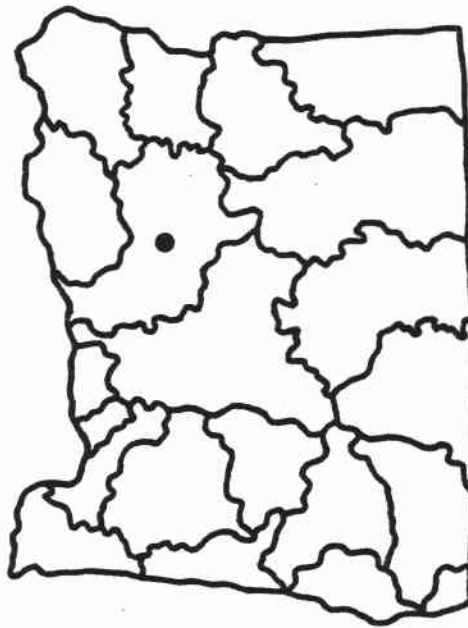
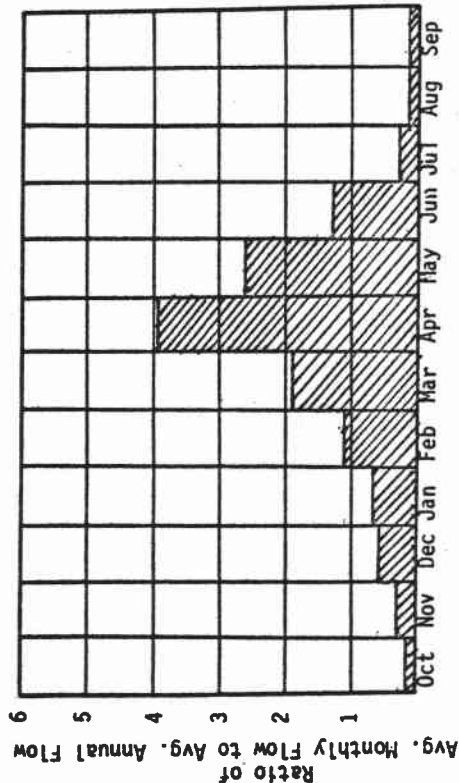
A. Upstream Elevation of Reach	1839	Ft. MSL
B. Downstream Elevation of Reach	1760	Ft. MSL
C. Total Available Head in Reach	79	Ft.
D. Average Slope in Reach	5.6	Ft./Mi.
E. Drainage Area above Reach Mouth	3939	Sq. Mi.
F. Inflow Classification	Regulated	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS	I THEORETICAL I PLANT SIZE I MW	I ANNUAL ENERGY I AVAILABLE I GWH	I PLANT I FACTOR I
I 95	I 129.7	I .87	I 7.61	I 1.000
I 80	I 316.5	I 2.12	I 17.19	I .926
I 50	I 748.9	I 5.01	I 33.68	I .767
I 30	I 1794.6	I 12.01	I 58.21	I .553
I 10	I 4273.3	I 28.61	I 87.28	I .348

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 1548 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0001

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 13, T9S, R26E
 D. Latitude, Longitude 44°47'N, 119°32'W
 E. Stream Name North Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 0.0 to 16.0

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

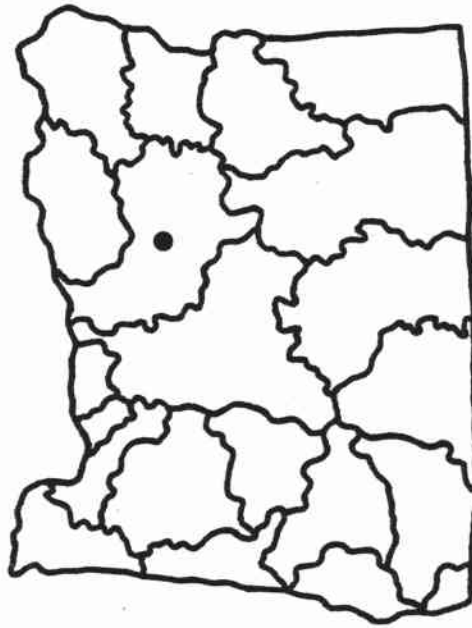
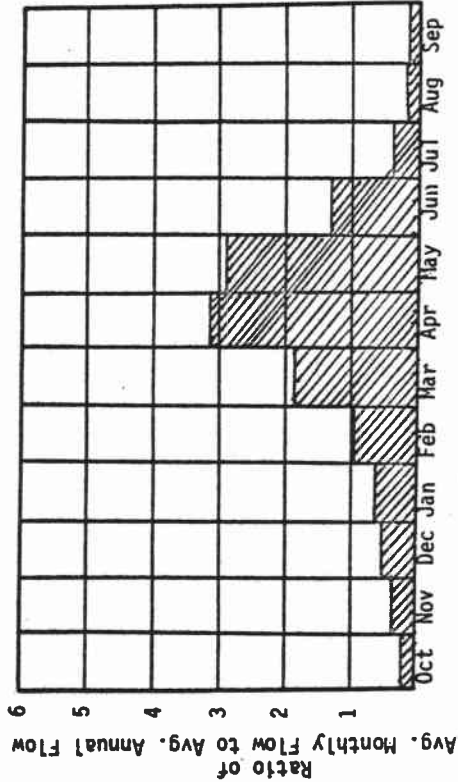
A. Upstream Elevation of Reach 1964 Ft. MSL
 B. Downstream Elevation of Reach 1839 Ft. MSL
 C. Total Available Head in Reach 125 Ft.
 D. Average Slope in Reach 7.8 Ft./Mi.
 E. Drainage Area above Reach Mouth 1721 Sq. Mi.
 F. Inflow Classification Regulated

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

EXCEEDANCE I	DISCHARGE I	THEORETICAL I	ANNUAL ENERGY I	PLANT I
PERCENTAGE I	CFS I	PLANT SIZE I	AVAILABLE I	FACTOR I
I	I	I	I	I
95	57.6	.61	5.35	1.000
80	152.3	1.61	13.03	.922
50	401.8	4.26	28.08	.753
30	999.4	10.59	50.26	.542
10	2549.4	27.01	79.03	.334

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 924 CFS



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0002

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 8, T8S, R28E
D. Latitude, Longitude	44°53'N, 119°23'W
E. Stream Name	North Fork John Day River
F. Major Basin Name	John Day
G. River Mile	16.0 to 32.3

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

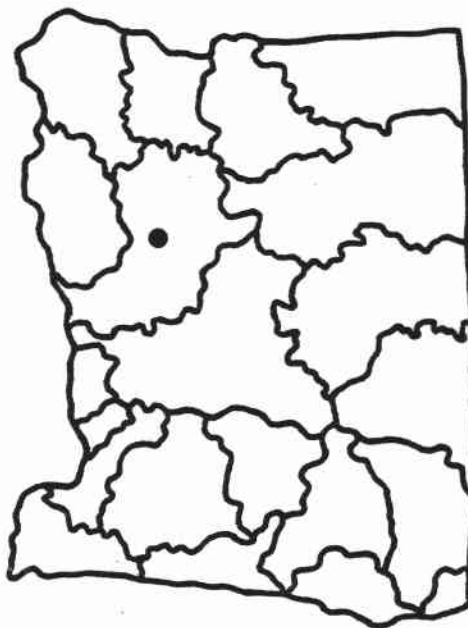
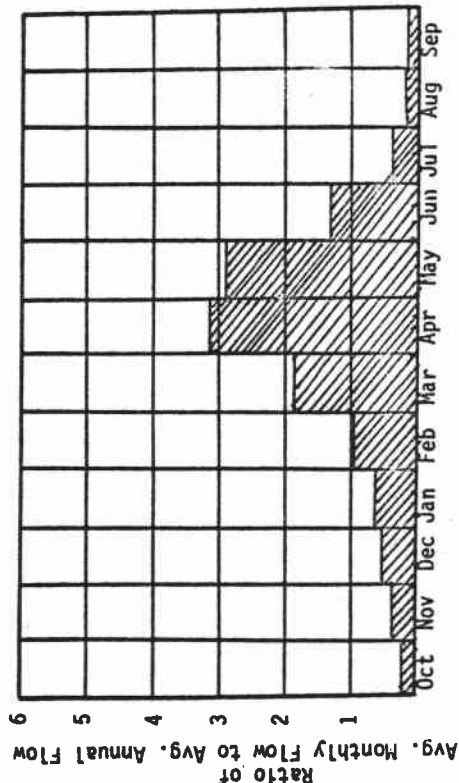
A. Upstream Elevation of Reach	2190	Ft. MSL
B. Downstream Elevation of Reach	1964	Ft. MSL
C. Total Available Head in Reach	226	Ft.
D. Average Slope in Reach	13.9	Ft./Mi.
E. Drainage Area above Reach Mouth	1381.5	Sq. Mi.
F. Inflow Classification	Regulated	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

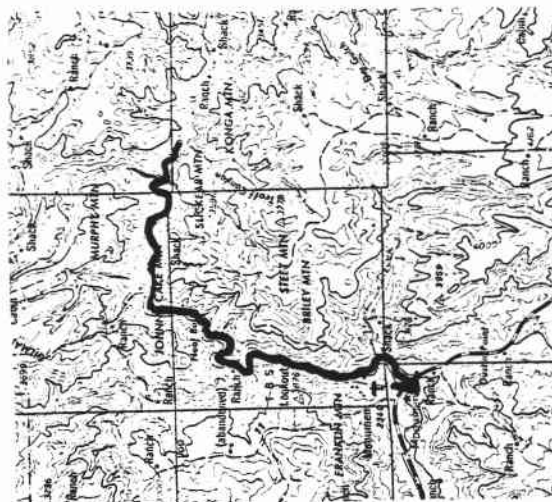
I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I I
I 95	I 49.6 I	I .95 I	I 8.32 I	I 1.000 I
I 80	I 133.0 I	I 2.55 I	I 20.57 I	I .922 I
I 50	I 358.2 I	I 6.86 I	I 45.12 I	I .751 I
I 30	I 897.0 I	I 17.18 I	I 81.28 I	I .540 I
I 10	I 2317.5 I	I 44.39 I	I 128.95 I	I .332 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 839 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-010-R0001

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 5, T8S, R29E
D. Latitude, Longitude	44° 54' N, 119° 16' W
E. Stream Name	Middle Fork John Day River
F. Major Basin Name	John Day
G. River Mile	0.0 to 5.7

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

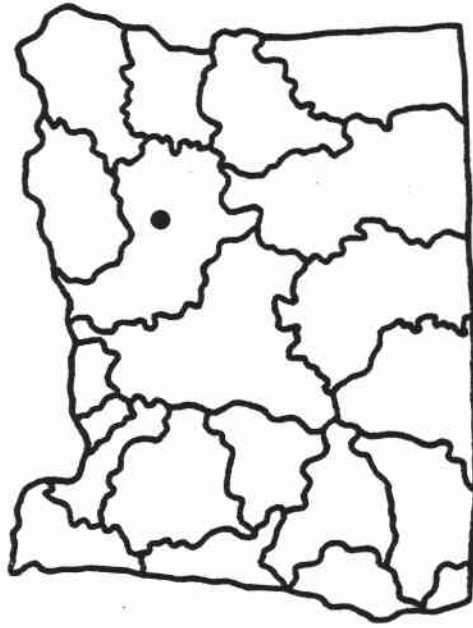
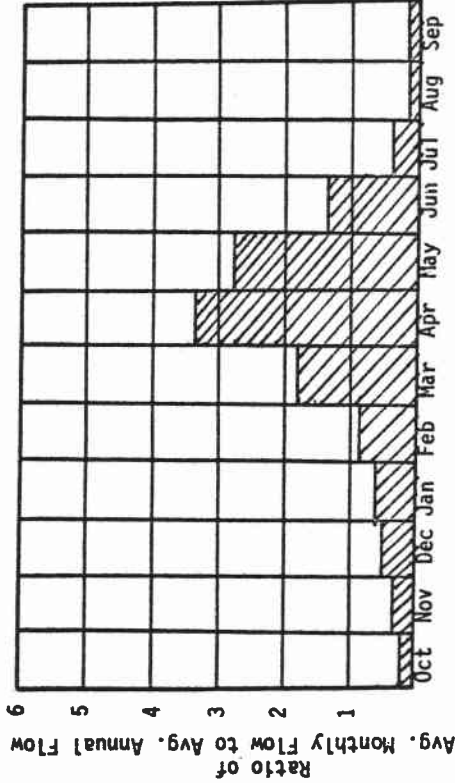
A. Upstream Elevation of Reach	2310	Ft. MSL
B. Downstream Elevation of Reach	2190	Ft. MSL
C. Total Available Head in Reach	120	Ft.
D. Average Slope in Reach	21	Ft./Mi.
E. Drainage Area above Reach Mouth	775.2	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

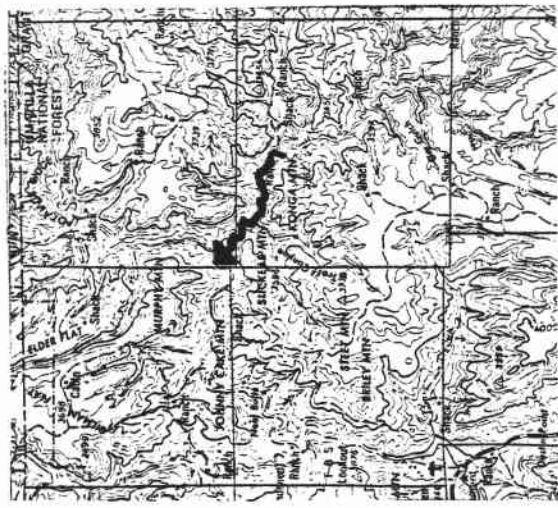
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GW	I	I
I	95	I	9.0	I	.09	I	.80	I	1.000
I	80	I	28.5	I	.29	I	2.32	I	.914
I	50	I	96.4	I	.98	I	6.25	I	.728
I	30	I	261.2	I	2.66	I	12.13	I	.521
I	10	I	780.3	I	7.94	I	21.38	I	.307

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 282 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



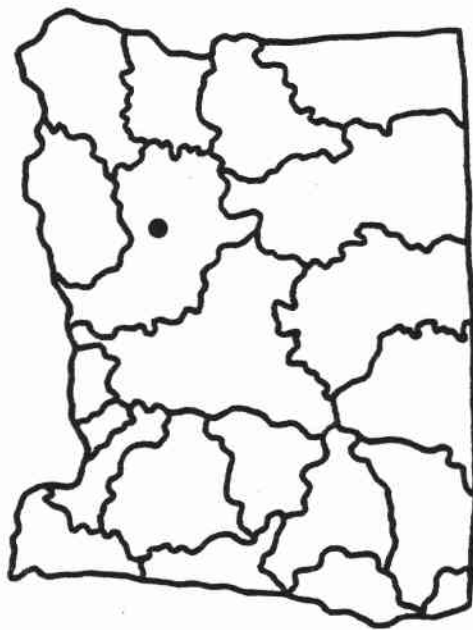
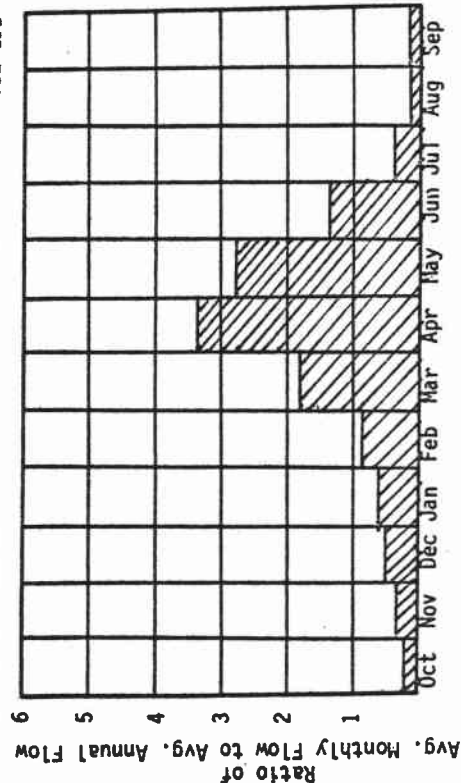
REACH # 02-500-200-040-010-R0002

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 7, T8S, R30E
D. Latitude, Longitude	44° 53' N, 119° 10' W
E. Stream Name	Middle Fork John Day River
F. Major Basin Name	John Day
G. River Mile	5.7 to 20.0

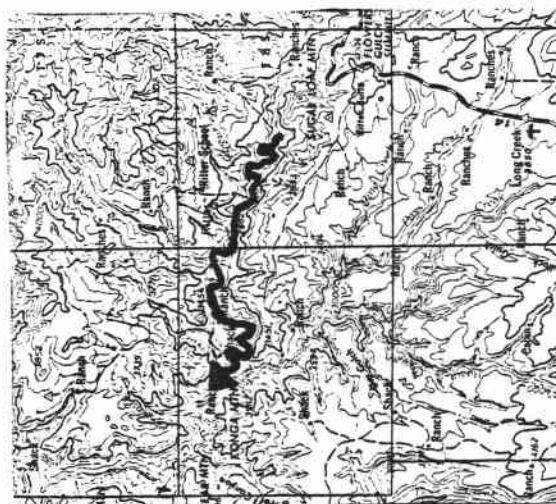
	Ft. MSL
A. Upstream Elevation of Reach	2681
B. Downstream Elevation of Reach	2310
C. Total Available Head in Reach	371
D. Average Slope in Reach	25.9
E. Drainage Area above Reach Mouth	554
F. Inflow Classification	Natural

I	EXCEEDANCE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT	I
I	PERCENTAGE	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR	I
I		I		I	MW	I	GWH	I		I
I	95	I	6.6	I	.21	I	1.82	I	1.000	I
I	80	I	21.6	I	.68	I	5.43	I	.913	I
I	50	I	76.2	I	2.40	I	15.20	I	.725	I
I	30	I	209.3	I	6.58	I	29.87	I	.518	I
I	10	I	641.9	I	20.18	I	53.70	I	.304	I

AVG. ANNUAL FLOW = 232 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-010-R0003

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 5, T9S, R31E
 D. Latitude, Longitude 44°49'N, 119°01'W
 E. Stream Name Middle Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 20.0 to 32.3

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

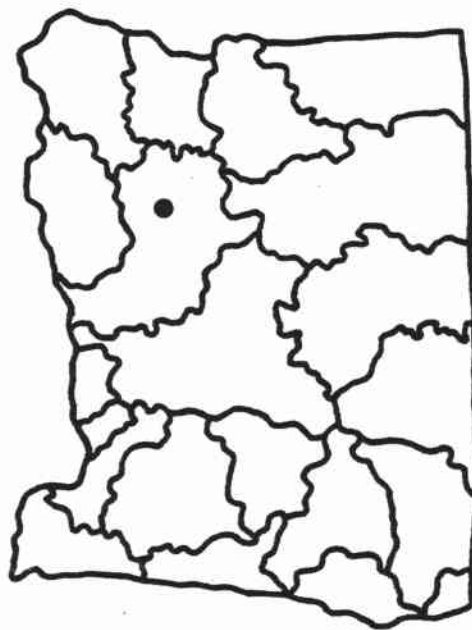
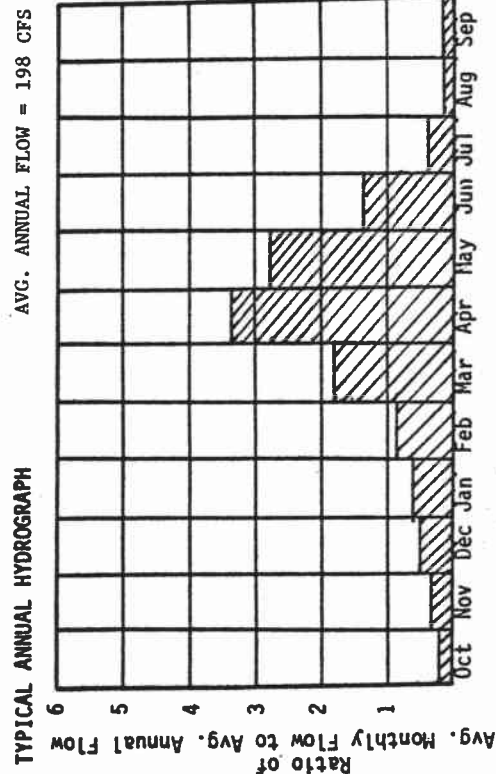
A. Upstream Elevation of Reach 3056 Ft. MSL
 B. Downstream Elevation of Reach 2681 Ft. MSL
 C. Total Available Head in Reach 375 Ft.
 D. Average Slope in Reach 30.5 Ft./Mi.
 E. Drainage Area above Reach Mouth 499.4 Sq. Mi.
 F. Inflow Classification Natural

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

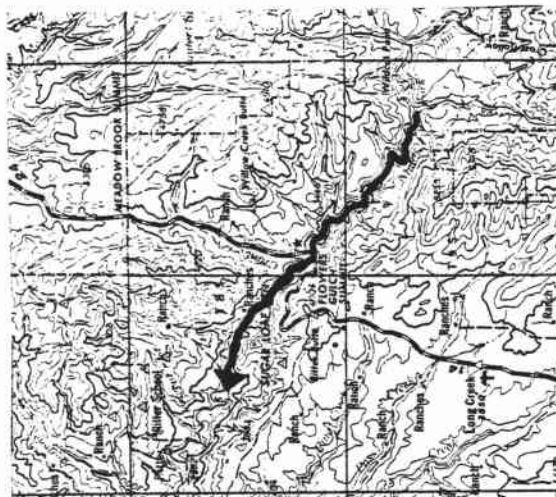
ENERGY CHARACTERISTICS

I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GW	I	I
I	95	I	5.2	I	.16	I	1.44	I	1.000
I	80	I	17.3	I	.55	I	4.39	I	.912
I	50	I	63.0	I	2.00	I	12.67	I	.722
I	30	I	175.2	I	5.57	I	25.16	I	.516
I	10	I	548.6	I	17.43	I	45.95	I	.301

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-010-R0004

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 17, T9S, R32E
D. Latitude, Longitude	44°47'N, 118°55'W
E. Stream Name	Middle Fork John Day River
F. Major Basin Name	John Day
G. River Mile	32.3 to 39.0

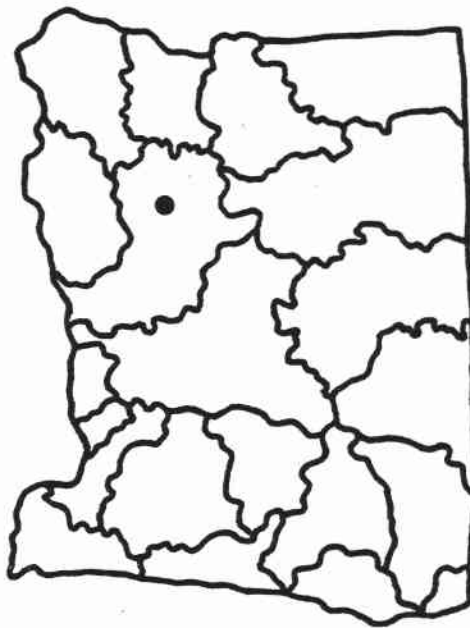
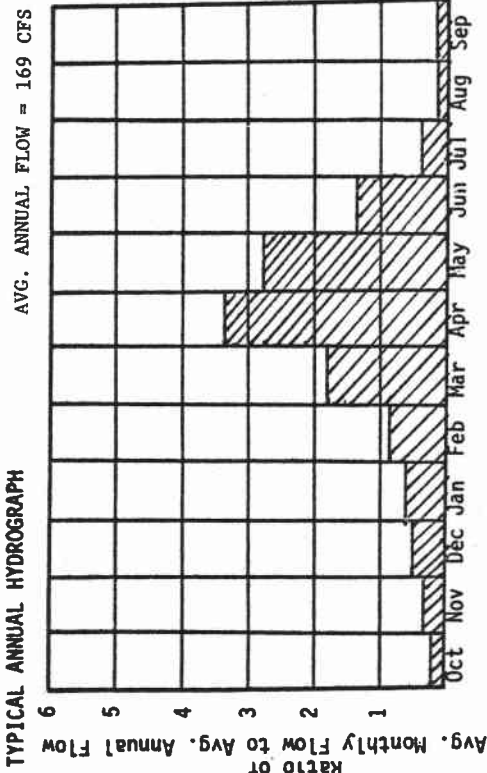
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	3253	Ft. MSL
B. Downstream Elevation of Reach	3056	Ft. MSL
C. Total Available Head in Reach	197	Ft.
D. Average Slope in Reach	29.4	Ft./Mi.
E. Drainage Area above Reach Mouth	423.7	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS				REACH FLOW DURATION AND THEORETICAL POTENTIAL			
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE
I	I	I	I	I	MW	I	GW
I	95	I	4.0	I	.07	I	.59
I	80	I	13.7	I	.23	I	1.83
I	50	I	51.9	I	.87	I	5.46
I	30	I	145.9	I	2.44	I	10.96
I	10	I	466.7	I	7.79	I	20.34
I		I		I		I	1.000
I		I		I		I	.911
I		I		I		I	.719
I		I		I		I	.514
I		I		I		I	.298

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-010-R0005

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec.11, T10S, R32E
 D. Latitude, Longitude 44°43'N, 118°50'W
 E. Stream Name Middle Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 39.0 to 49.0

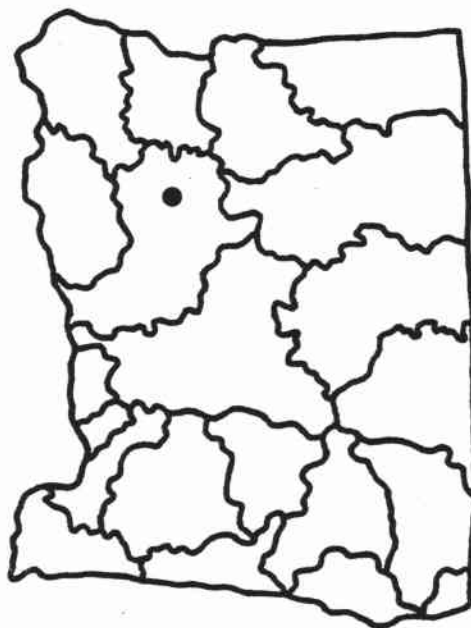
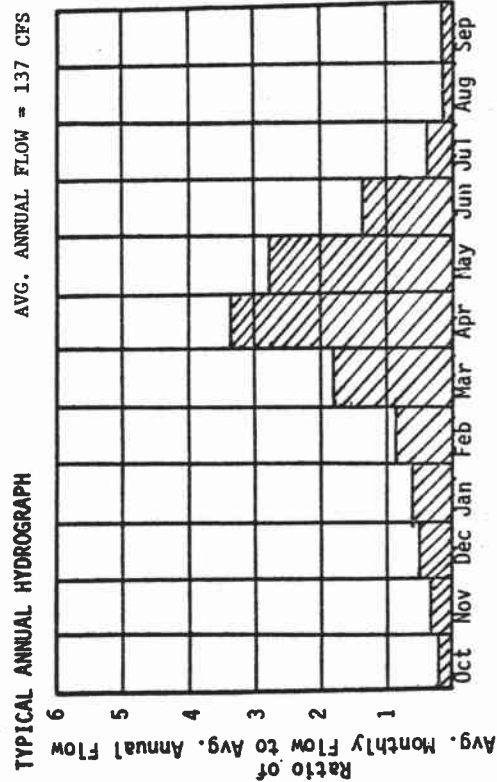
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach 3477 Ft. MSL
 B. Downstream Elevation of Reach 3253 Ft. MSL
 C. Total Available Head in Reach 224 Ft.
 D. Average Slope in Reach 22.4 Ft./Mi.
 E. Drainage Area above Reach Mouth 328.2 Sq.Mi.
 F. Inflow Classification Natural

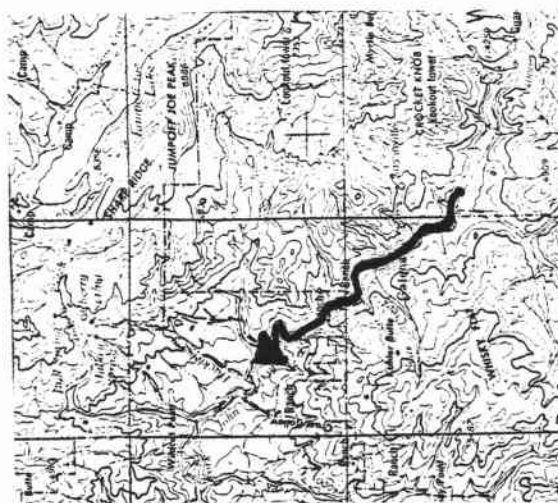
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I	EXCEEDANCE I	DISCHARGE I	THEORETICAL I	PLANT SIZE I	ANNUAL ENERGY I	PLANT I
I	PERCENTAGE I	CFS I	PLANT I	SIZE I	AVAILABLE I	FACTOR I
I	I	I	MW I	I	GMH I	I
I	95	I	2.9 I	.05 I	.48 I	I 1.000 I
I	80	I	10.2 I	.19 I	1.55 I	I .910 I
I	50	I	40.4 I	.77 I	4.80 I	I .716 I
I	30	I	115.2 I	2.19 I	9.78 I	I .511 I
I	10	I	378.9 I	7.19 I	18.55 I	I .294 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-010-R0006

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 10, T11S, R33E
 D. Latitude, Longitude 44° 37' N, 118° 37' W
 E. Stream Name Middle Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 49.0 to H.W.

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

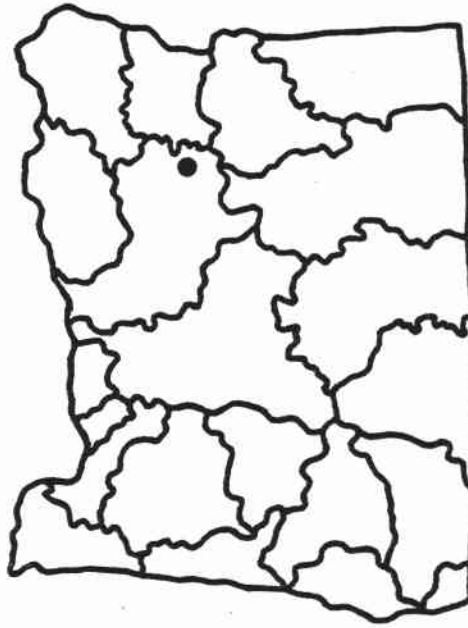
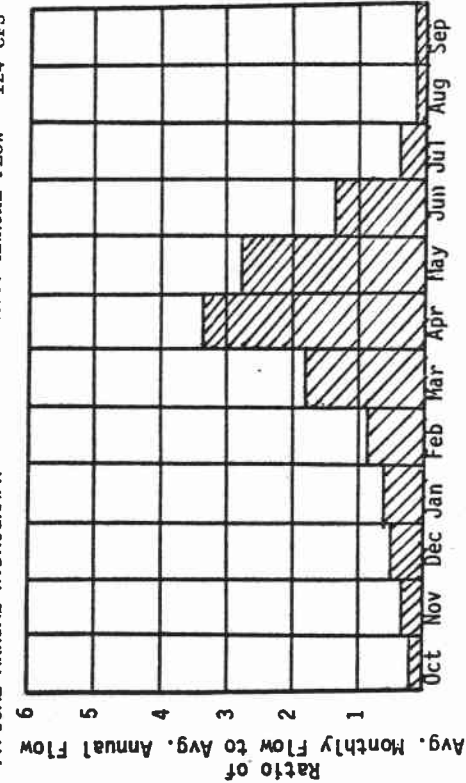
A. Upstream Elevation of Reach --- Ft. MSL
 B. Downstream Elevation of Reach --- Ft. MSL
 C. Total Available Head in Reach 66 Ft.
 D. Average Slope in Reach --- Ft./Mi.
 E. Drainage Area above Reach Mouth 252.7 Sq. Mi.
 F. Inflow Classification Natural

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

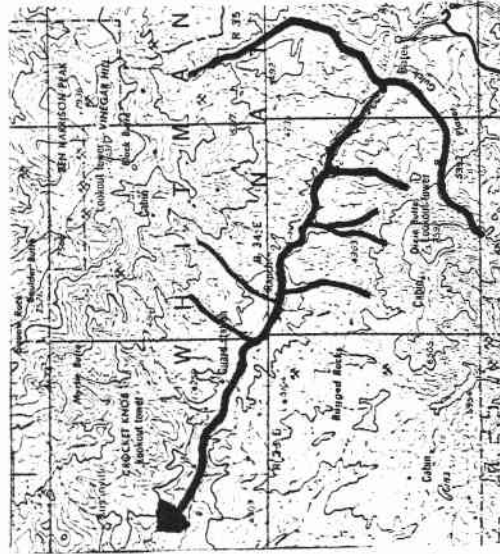
I	EXCEEDANCE I	DISCHARGE I	THEORETICAL I	ANNUAL ENERGY I	PLANT I
I	PERCENTAGE I	CFS I	PLANT SIZE I	AVAILABLE I	FACTOR I
I	I	I	MW I	GW I	I
I 95	I	2.5 I	.01 I	.12 I	1.000 I
I 80	I	8.9 I	.05 I	.40 I	.910 I
I 50	I	35.8 I	.20 I	1.25 I	.714 I
I 30	I	103.1 I	.58 I	2.57 I	.509 I
I 10	I	343.4 I	1.92 I	4.93 I	.293 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 124 CFS



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0003

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 19, T7S, R29E
 D. Latitude, Longitude 44° 57' N, 119° 18' W
 E. Stream Name North Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 32.3 to 39.0

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

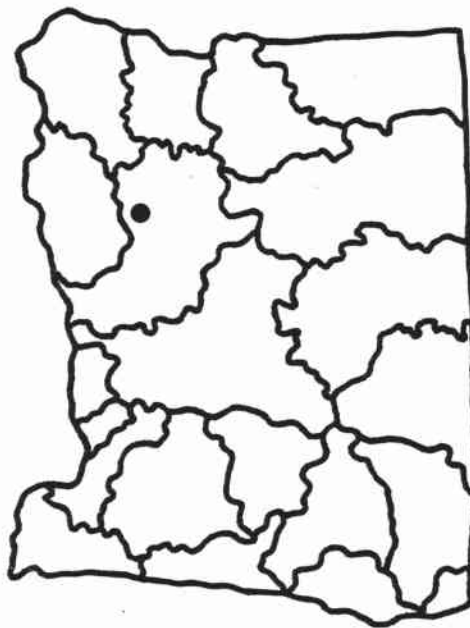
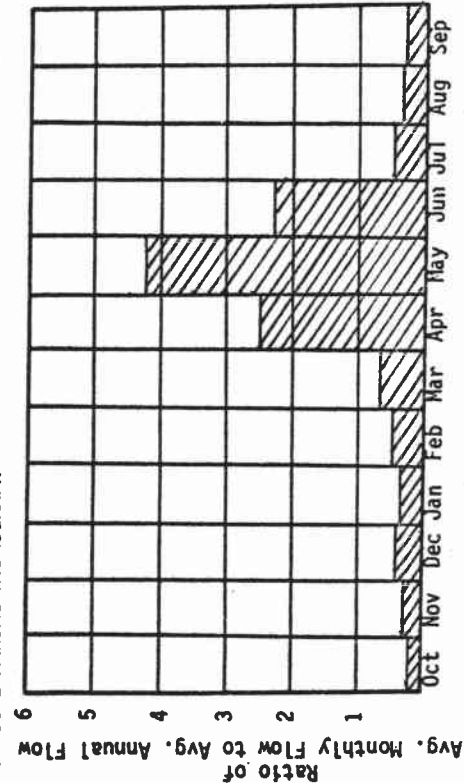
A. Upstream Elevation of Reach 2298 Ft. MSL
 B. Downstream Elevation of Reach 2190 Ft. MSL
 C. Total Available Head in Reach 108 Ft.
 D. Average Slope in Reach 16.1 Ft./Mi.
 E. Drainage Area above Reach Mouth 310.5 Sq. Mi.
 F. Inflow Classification Regulated

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

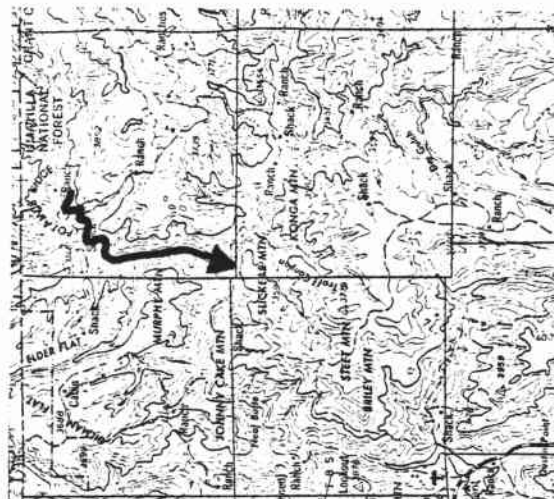
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GWH	I	I
I	95	I	21.7	I	.20	I	1.74	I	1.000
I	80	I	63.1	I	.58	I	4.65	I	.918
I	50	I	189.9	I	1.74	I	11.25	I	.739
I	30	I	494.1	I	4.52	I	21.01	I	.530
I	10	I	1369.3	I	12.53	I	35.04	I	.319

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 496 CFS



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0004

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 4, T7S, R30E
D. Latitude, Longitude	45°00'N, 119°07'W
E. Stream Name	North Fork John Day River
F. Major Basin Name	John Day
G. River Mile	39.0 to 56.9

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

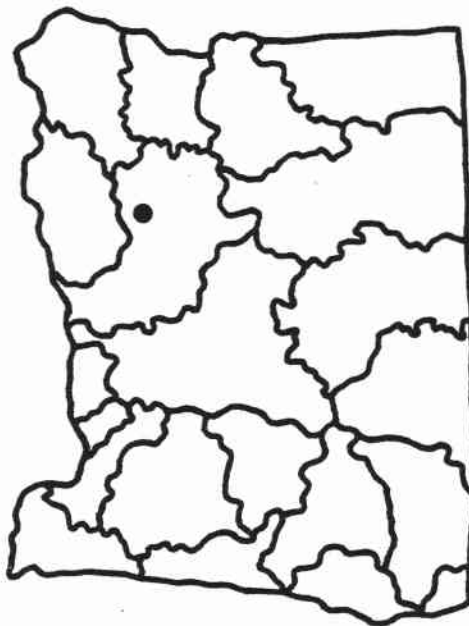
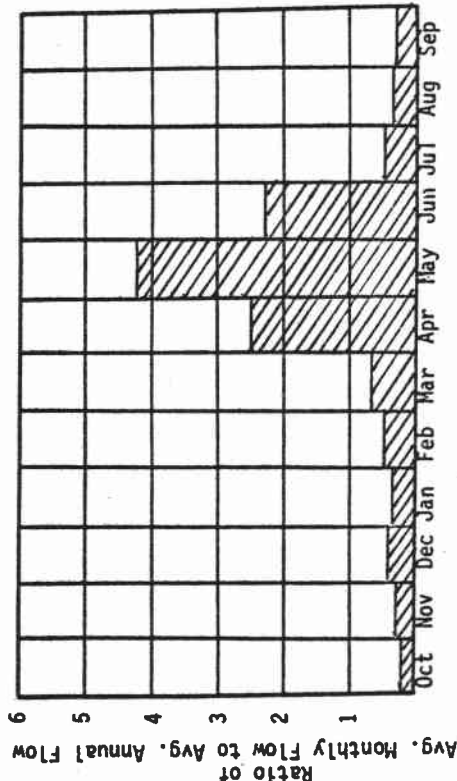
A. Upstream Elevation of Reach	2700	Ft. MSL
B. Downstream Elevation of Reach	2298	Ft. MSL
C. Total Available Head in Reach	402	Ft.
D. Average Slope in Reach	22.5	Ft./Mi.
E. Drainage Area above Reach Mouth	1087.2	Sq. Mi.
F. Inflow Classification	Regulated	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 19.2 I	I .66 I	I 5.74 I	I 1.000 I
I 80 I	I 56.6 I	I 1.93 I	I 15.50 I	I .917 I
I 50 I	I 173.1 I	I 5.90 I	I 38.10 I	I .737 I
I 30 I	I 452.9 I	I 15.43 I	I 71.50 I	I .529 I
I 10 I	I 1268.1 I	I 43.20 I	I 120.16 I	I .318 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 459 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY-PENDLETON



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-020-R0001

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 15, T6S, R31E
D. Latitude, Longitude	45°03'N, 119°00'W
E. Stream Name	Camas Creek
F. Major Basin Name	John Day
G. River Mile	0.0 to 8.0

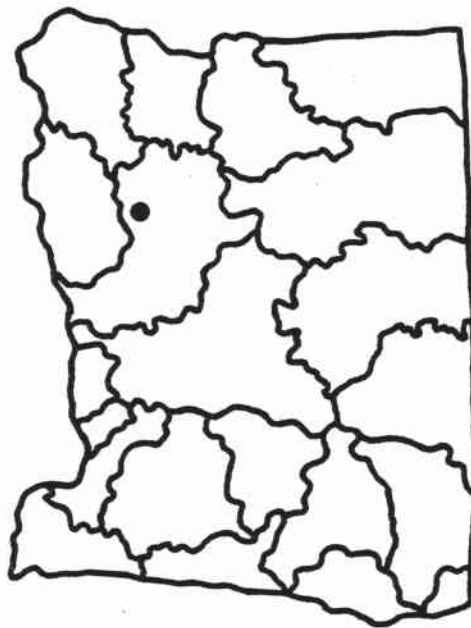
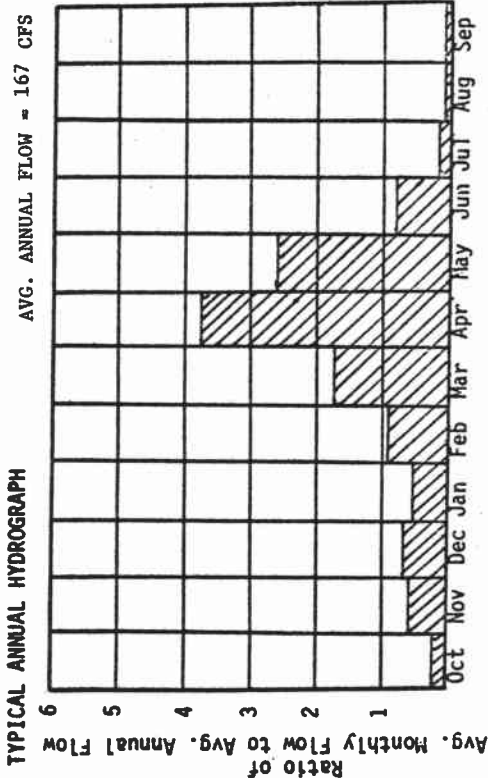
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	3126	Ft. MSL
B. Downstream Elevation of Reach	2700	Ft. MSL
C. Total Available Head in Reach	426	Ft.
D. Average Slope in Reach	53.2	Ft./Mi.
E. Drainage Area above Reach Mouth	407.2	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95 I	I 3.9 I	I .14 I	I 1.25 I	I 1.000 I
I 80 I	I 13.6 I	I .49 I	I 3.91 I	I .911 I
I 50 I	I 51.3 I	I 1.85 I	I 11.67 I	I .719 I
I 30 I	I 144.4 I	I 5.21 I	I 23.44 I	I .513 I
I 10 I	I 462.4 I	I 16.69 I	I 43.56 I	I .298 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: PENDLETON



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-020-R0002

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 3, T5S, R32E
D. Latitude, Longitude	45° 10' N, 118° 51' W
E. Stream Name	Camas Creek
F. Major Basin Name	John Day
G. River Mile	8.0 to H.W.

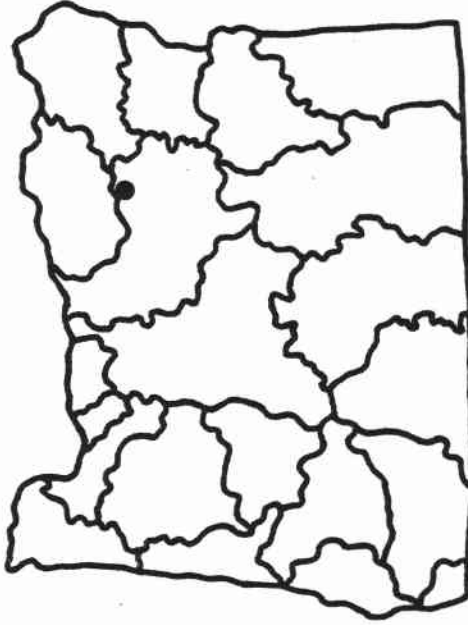
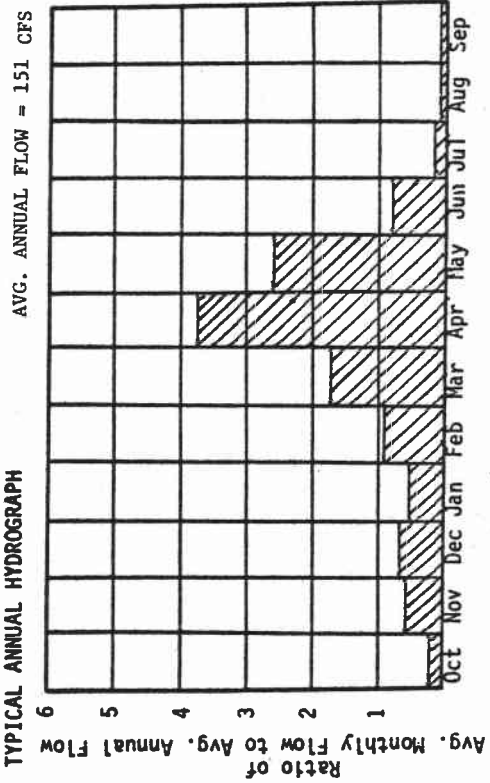
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	--	Ft. MSL
B. Downstream Elevation of Reach	--	Ft. MSL
C. Total Available Head in Reach	66	Ft.
D. Average Slope in Reach	--	Ft./Mi.
E. Drainage Area above Reach Mouth	32.5	Sq. Mi.
F. Inflow Classification	Natural	

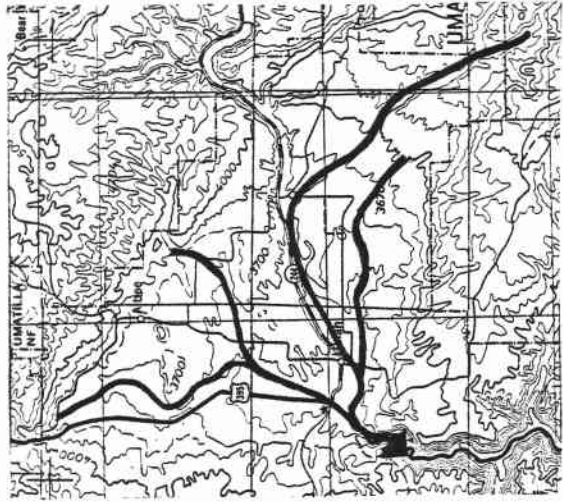
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95 I	I 3.4 I	I .02 I	I .16 I	I 1.000 I
I 80 I	I 11.7 I	I .07 I	I .52 I	I .911 I
I 50 I	I 45.4 I	I .25 I	I 1.60 I	I .717 I
I 30 I	I 128.7 I	I .72 I	I 3.23 I	I .512 I
I 10 I	I 417.8 I	I 2.34 I	I 6.06 I	I .296 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: PENDLETON



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0005

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 35, T6S, R31E
 D. Latitude, Longitude 44°59'N, 118°58'W
 E. Stream Name North Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 56.9 to 60.4

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

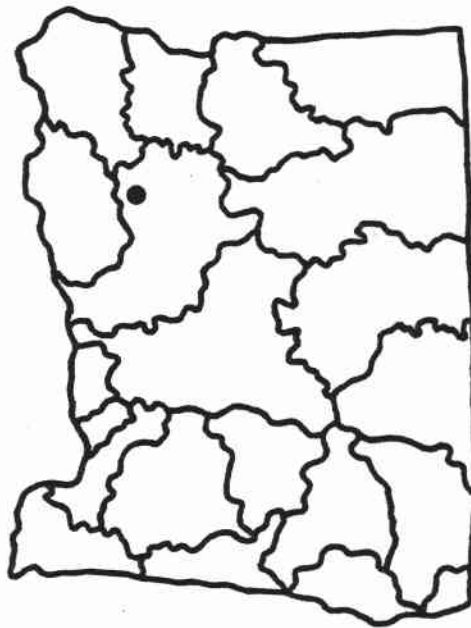
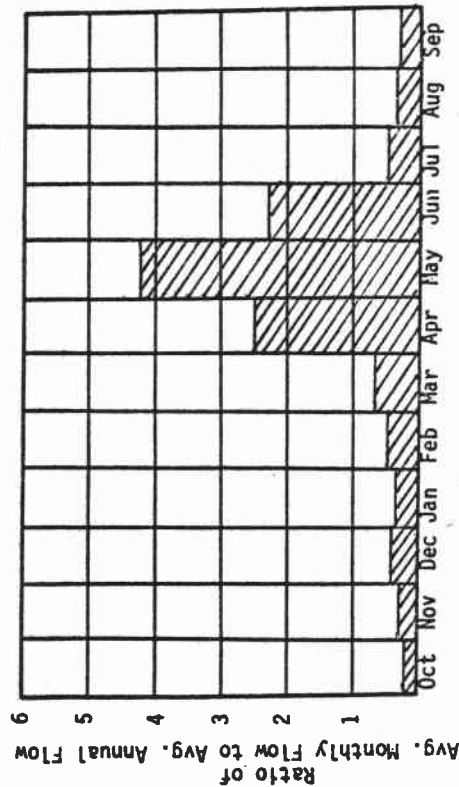
A. Upstream Elevation of Reach 2790 Ft. MSL
 B. Downstream Elevation of Reach 2700 Ft. MSL
 C. Total Available Head in Reach 90 Ft.
 D. Average Slope in Reach 25.7 Ft./Mi.
 E. Drainage Area above Reach Mouth 583.6 Sq. Mi.
 F. Inflow Classification Natural

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

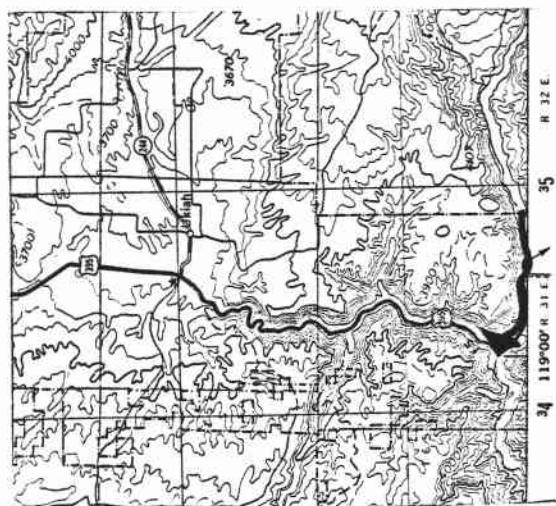
I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I I	I I	I MW I	I GWH I	I I
I 95 I	I 7.3 I	I .06 I	I .49 I	I 1.000 I
I 80 I	I 23.7 I	I .18 I	I 1.44 I	I .914 I
I 50 I	I 82.4 I	I .63 I	I 3.99 I	I .726 I
I 30 I	I 225.3 I	I 1.72 I	I 7.81 I	I .519 I
I 10 I	I 684.8 I	I 5.22 I	I 13.95 I	I .305 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 248 CFS



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: PENDLETON-CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0006

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 34, T6S, R32E
D. Latitude, Longitude	45°00'N, 118°51'W
E. Stream Name	North Fork John Day River
F. Major Basin Name	John Day
G. River Mile	60.4 to 70.4

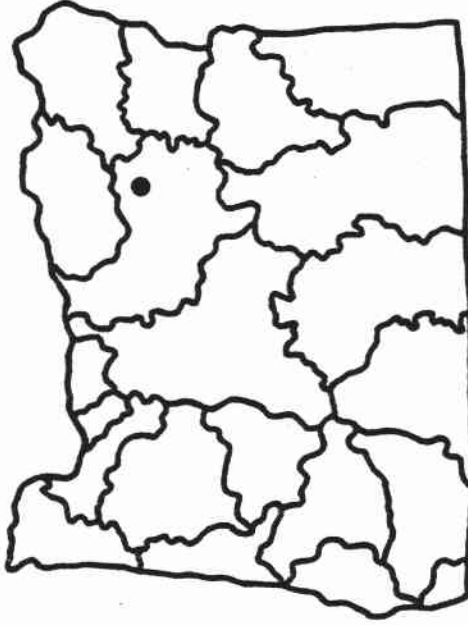
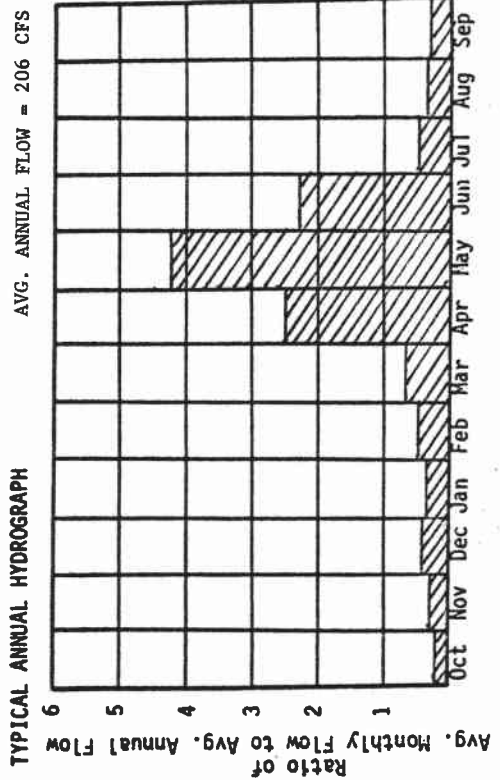
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	3119	Ft. MSL
B. Downstream Elevation of Reach	2790	Ft. MSL
C. Total Available Head in Reach	329	Ft.
D. Average Slope in Reach	32.9	Ft./Mi.
E. Drainage Area above Reach Mouth	424.4	Sq. Mi.
F. Inflow Classification	Natural	

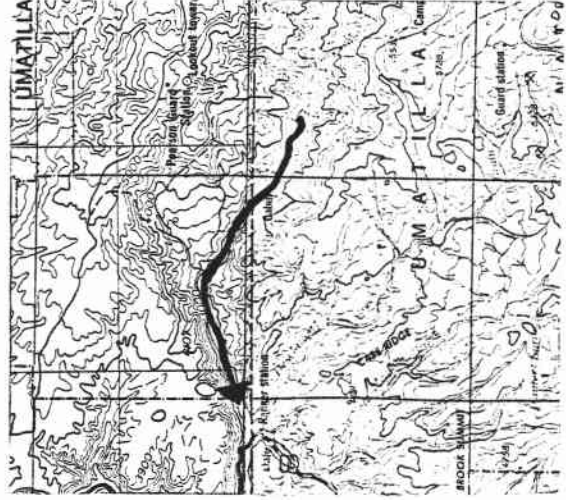
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY	I	PLANT
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE	I	FACTOR
I	I	I	I	I	MW	I	GWH	I	I
I	95	I	5.5	I	.15	I	1.33	I	1.000
I	80	I	18.2	I	.51	I	4.05	I	.913
I	50	I	65.8	I	1.84	I	11.61	I	.722
I	30	I	182.4	I	5.09	I	23.01	I	.516
I	10	I	568.5	I	15.85	I	41.87	I	.302

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0007

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 20, T7S, R33E
D. Latitude, Longitude	44°57'N, 118°40'W
E. Stream Name	North Fork John Day River
F. Major Basin Name	John Day
G. River Mile	70.4 to 87.0

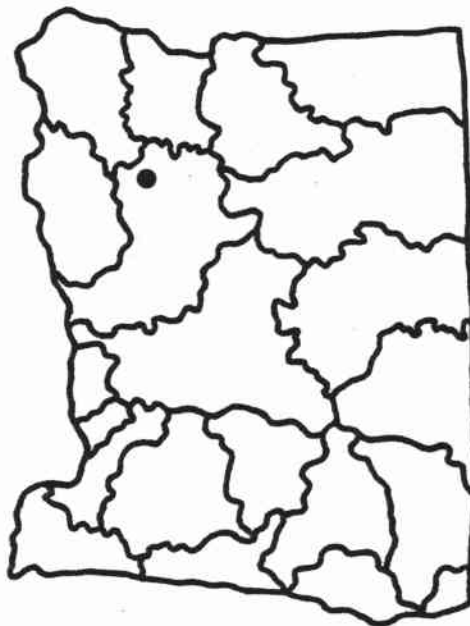
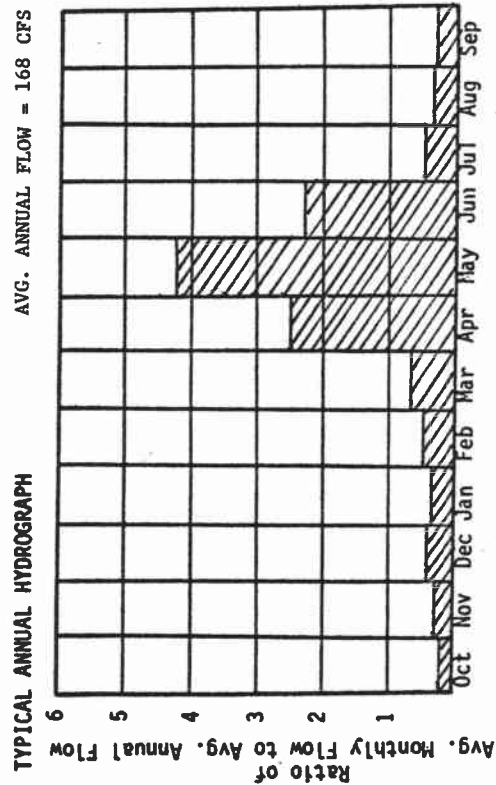
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	3940	Ft. MSL
B. Downstream Elevation of Reach	3119	Ft. MSL
C. Total Available Head in Reach	821	Ft.
D. Average Slope in Reach	49.7	Ft./Mi.
E. Drainage Area above Reach Mouth	386.1	Sq. Mi.
F. Inflow Classification	Natural	

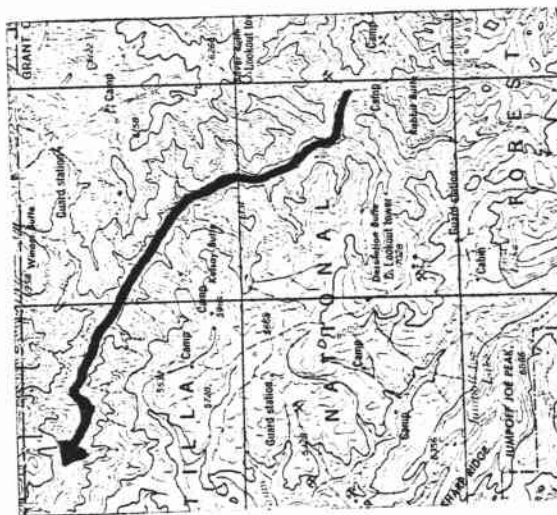
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE	I DISCHARGE I CFS	I THEORETICAL I PLANT SIZE I MW	I ANNUAL ENERGY I AVAILABLE I GWH	I PLANT I FACTOR I
I 95	I 4.0	I .28	I 2.43	I 1.000
I 80	I 13.7	I .95	I 7.61	I .911
I 50	I 51.7	I 3.60	I 22.67	I .719
I 30	I 145.5	I 10.12	I 45.53	I .514
I 10	I 465.5	I 32.39	I 84.54	I .298

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-040-000-R0008

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec.11, T9S, R35E
D. Latitude, Longitude	44°48'N, 118°28'W
E. Stream Name	North Fork John Day River
F. Major Basin Name	John Day
G. River Mile	87.0 to H.W.

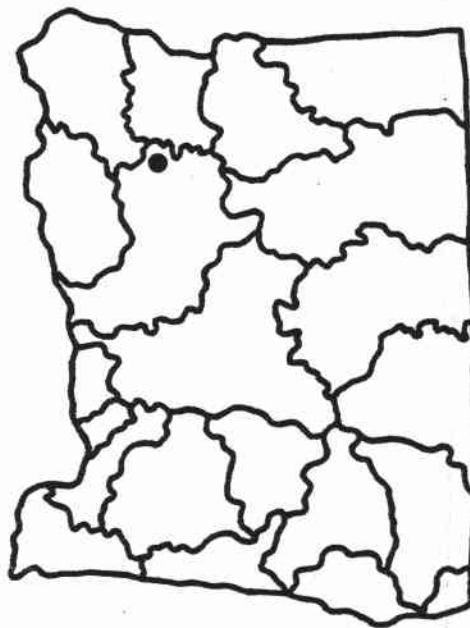
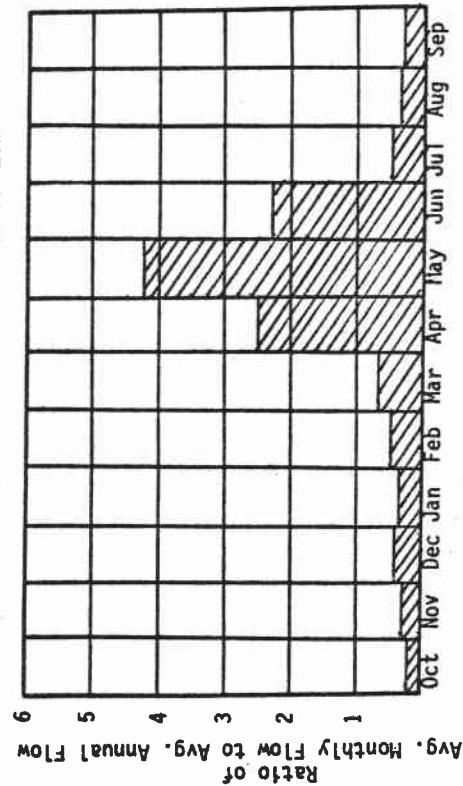
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	--	Ft. MSL
B. Downstream Elevation of Reach	--	Ft. MSL
C. Total Available Head in Reach	66	Ft.
D. Average Slope in Reach	--	Ft./Mi.
E. Drainage Area above Reach Mouth	257.	Sq.Mi.
F. Inflow Classification	Natural	

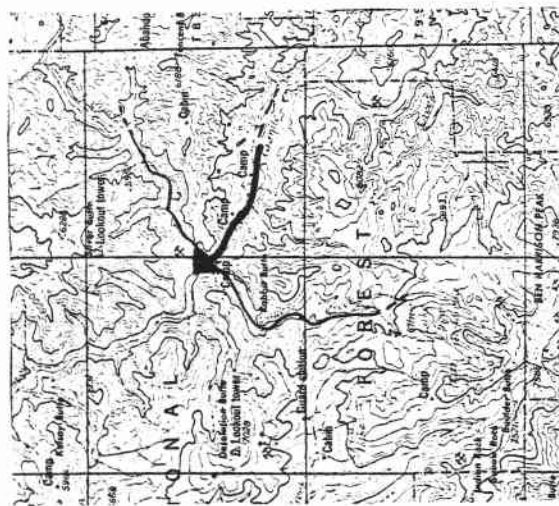
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95 I	I 2.9 I	I .02 I	I .14 I	I 1.000 I
I 80 I	I 10.3 I	I .06 I	I .46 I	I .910 I
I 50 I	I 40.7 I	I .23 I	I 1.43 I	I .716 I
I 30 I	I 116.2 I	I .65 I	I 2.91 I	I .511 I
I 10 I	I 381.9 I	I 2.14 I	I 5.51 I	I .295 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0016

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 19, T10S, R26E
D. Latitude, Longitude	44°42'N, 119°39'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	184.7 to 195.0

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

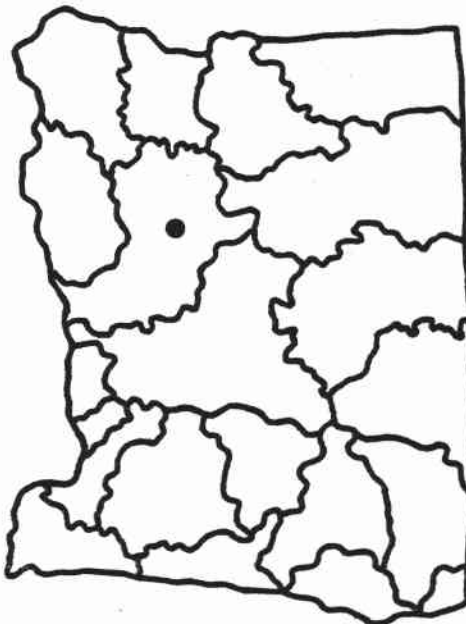
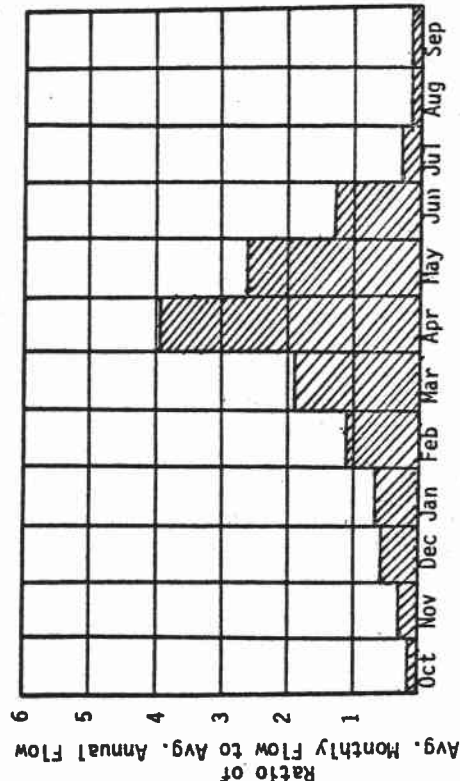
A. Upstream Elevation of Reach	2012	Ft. MSL
B. Downstream Elevation of Reach	1839	Ft. MSL
C. Total Available Head in Reach	173	Ft.
D. Average Slope in Reach	16.8	Ft./Mi.
E. Drainage Area above Reach Mouth	2147.2	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

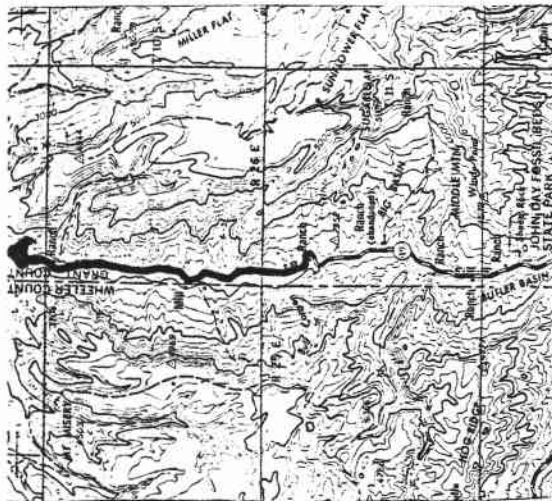
I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95	I 32.7 I	I .48 I	I 4.20 I	I 1.000 I
I 80	I 91.4 I	I 1.34 I	I 10.80 I	I .920 I
I 50	I 260.3 I	I 3.82 I	I 24.90 I	I .745 I
I 30	I 664.5 I	I 9.74 I	I 45.66 I	I .535 I
I 10	I 1778.5 I	I 26.07 I	I 74.28 I	I .325 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 644 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0017

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 31, T11S, R26E
D. Latitude, Longitude	44° 34' N, 119° 34' W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	195.0 to 204.4

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

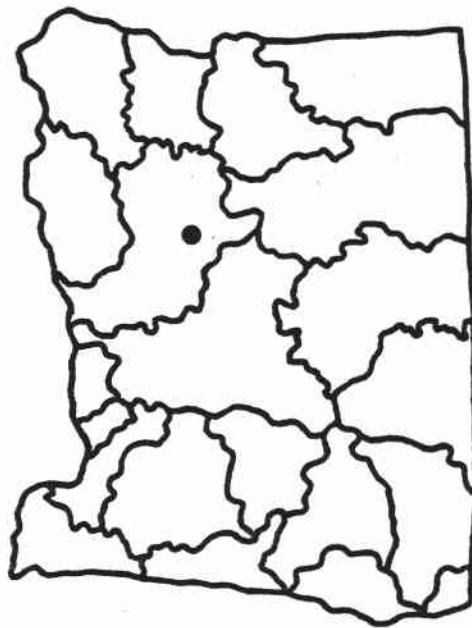
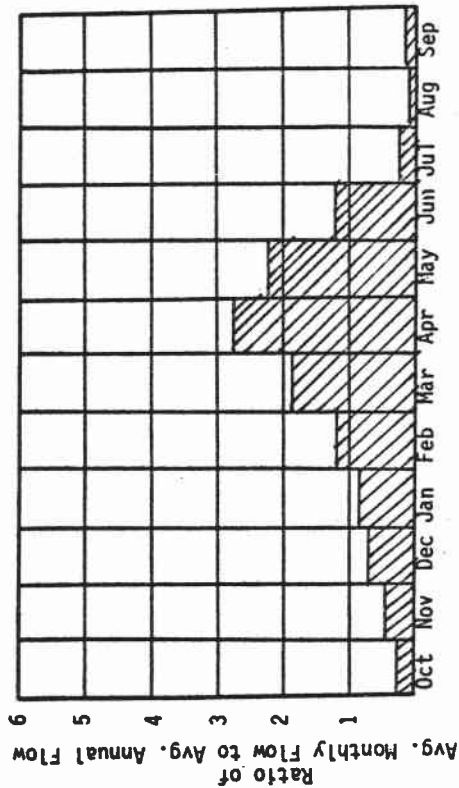
A. Upstream Elevation of Reach	2225	Ft. MSL
B. Downstream Elevation of Reach	2012	Ft. MSL
C. Total Available Head in Reach	213	Ft.
D. Average Slope in Reach	22.7	Ft./Mi.
E. Drainage Area above Reach Mouth	2070.2	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

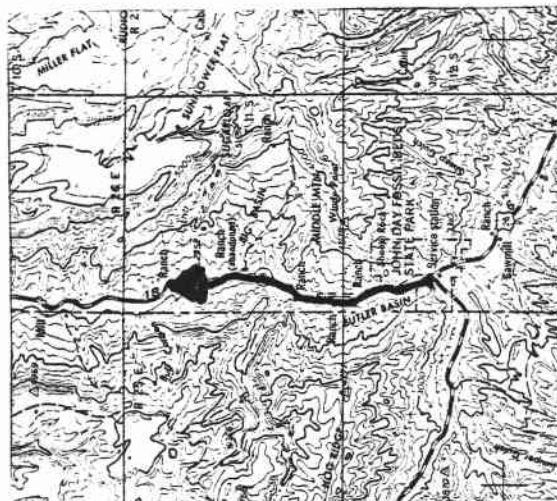
I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95 I	I 31.5 I	I .57 I	I 4.99 I	I 1.000 I
I 80 I	I 88.4 I	I 1.60 I	I 12.86 I	I .920 I
I 50 I	I 253.0 I	I 4.57 I	I 29.77 I	I .744 I
I 30 I	I 647.0 I	I 11.68 I	I 54.69 I	I .535 I
I 10 I	I 1737.0 I	I 31.35 I	I 89.16 I	I .325 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 629 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0018

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 34, T12S, R26E
D. Latitude, Longitude	44°29'N, 119°34'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	204.4 to 211.8

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

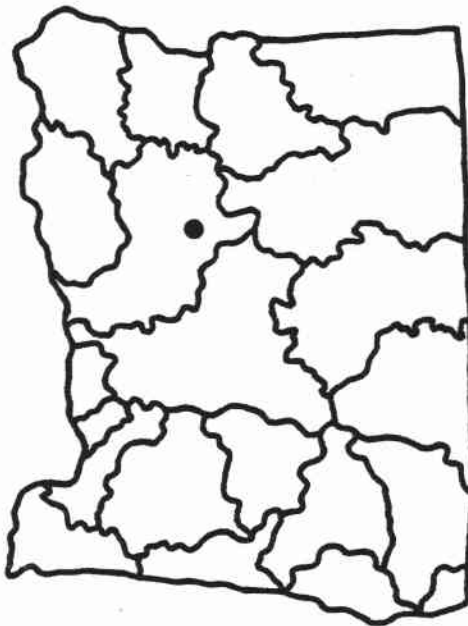
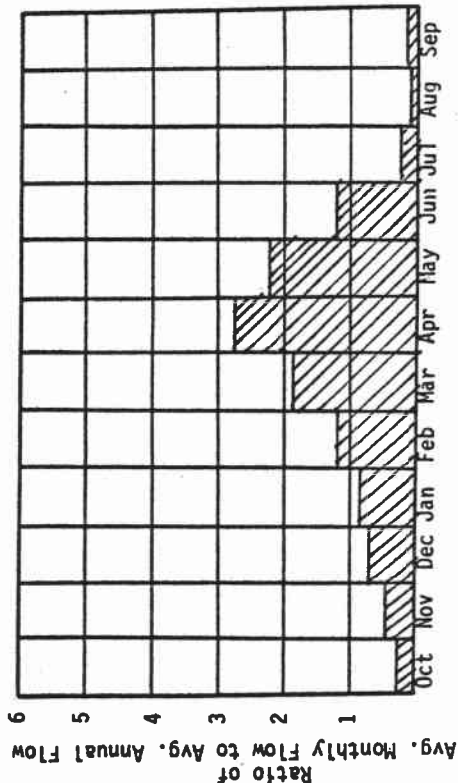
A. Upstream Elevation of Reach	2330	Ft. MSL
B. Downstream Elevation of Reach	2225	Ft. MSL
C. Total Available Head in Reach	105	Ft.
D. Average Slope in Reach	14.2	Ft./Mi.
E. Drainage Area above Reach Mouth	1706.8	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95 I	I 22.9 I	I .20 I	I 1.78 I	I 1.000 I
I 80 I	I 66.2 I	I .59 I	I 4.74 I	I .918 I
I 50 I	I 197.8 I	I 1.76 I	I 11.41 I	I .740 I
I 30 I	I 513.4 I	I 4.57 I	I 21.25 I	I .531 I
I 10 I	I 1416.5 I	I 12.60 I	I 35.33 I	I .320 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 513 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-060-000-R0001

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 12, T14S, R26E
 D. Latitude, Longitude 44°22'N, 119°33'W
 E. Stream Name South Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 0.0 to 17.2

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

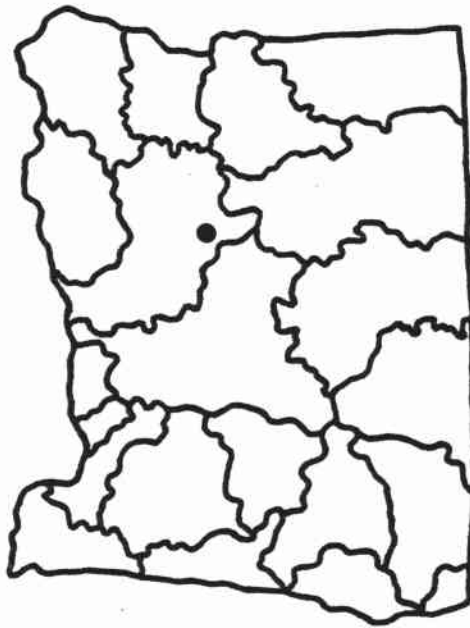
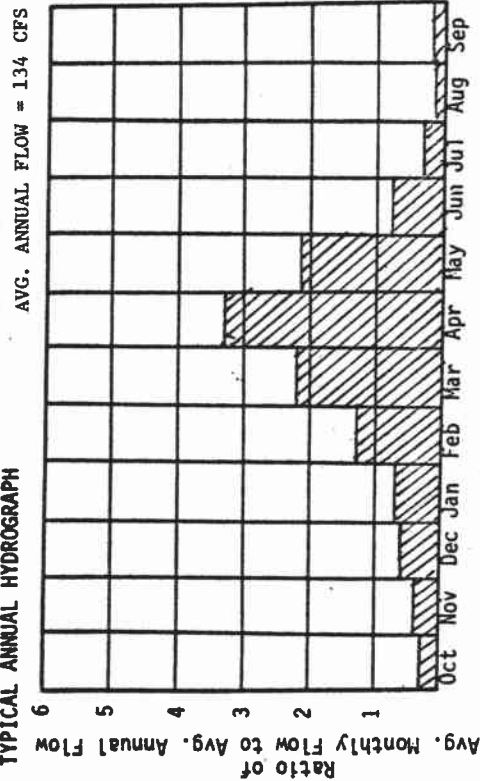
A. Upstream Elevation of Reach 2926 Ft. MSL
 B. Downstream Elevation of Reach 2330 Ft. MSL
 C. Total Available Head in Reach 596 Ft.
 D. Average Slope in Reach 33.9 Ft./Mi.
 E. Drainage Area above Reach Mouth 632.6 Sq. Mi.
 F. Inflow Classification Natural

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

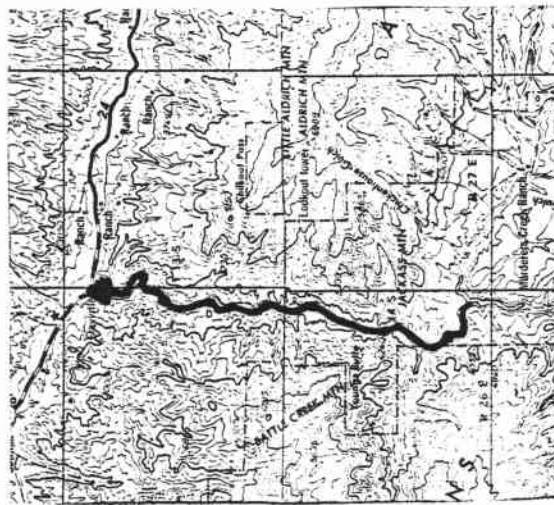
ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS	I PLANT SIZE I MW	I THEORETICAL I ANNUAL ENERGY I AVAILABLE I GWH	I PLANT I FACTOR I
I 95 I	I 2.8 I	I .14 I	I 1.23 I	I 1.000 I
I 80 I	I 9.9 I	I .50 I	I 3.97 I	I .910 I
I 50 I	I 39.1 I	I 1.98 I	I 12.40 I	I .716 I
I 30 I	I 111.9 I	I 5.65 I	I 25.28 I	I .510 I
I 10 I	I 369.5 I	I 18.66 I	I 48.07 I	I .294 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-060-000-R0002

I. LOCATION

A. State Oregon
 B. County Grant
 C. Township, Range Sec. 23, T17S, R27E
 D. Latitude, Longitude 44°05'N, 119°27'W
 E. Stream Name South Fork John Day River
 F. Major Basin Name John Day
 G. River Mile 17.2 to H.W.

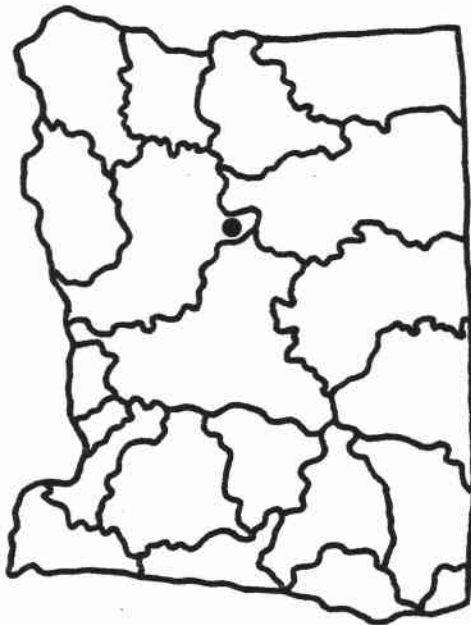
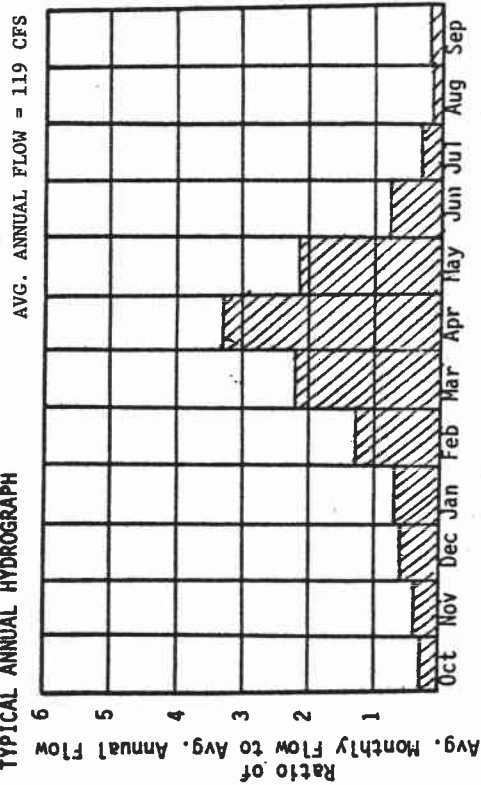
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach Ft. MSL
 B. Downstream Elevation of Reach Ft. MSL
 C. Total Available Head in Reach 66 Ft.
 D. Average Slope in Reach Ft./Mi.
 E. Drainage Area above Reach Mouth 549.4 Sq. Mi.
 F. Inflow Classification Natural

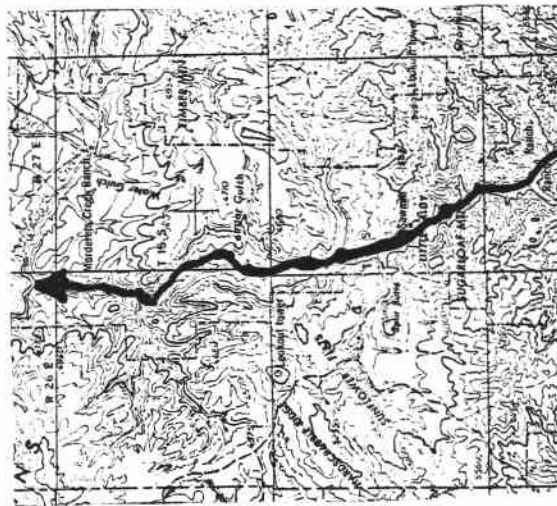
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I I
I 95 I	I 2.3 I	I .01 I	I .11 I	I 1.000 I
I 80 I	I 8.4 I	I .05 I	I .37 I	I .909 I
I 50 I	I 34.1 I	I .19 I	I 1.19 I	I .714 I
I 30 I	I 98.2 I	I .55 I	I 2.45 I	I .509 I
I 10 I	I 329.1 I	I 1.84 I	I 4.71 I	I .292 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
 1:250,000 SCALE
 MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0019

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 11, T13S, R27E
D. Latitude, Longitude	44°27'N, 119°26'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	211.8 to 222.5

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	2542	Ft. MSL
B. Downstream Elevation of Reach	2330	Ft. MSL
C. Total Available Head in Reach	212	Ft.
D. Average Slope in Reach	19.8	Ft./Mi.
E. Drainage Area above Reach Mouth	963.7	Sq. Mi.
F. Inflow Classification	Natural	

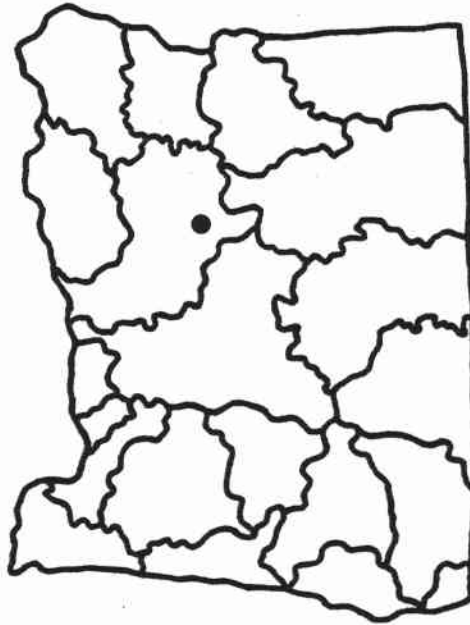
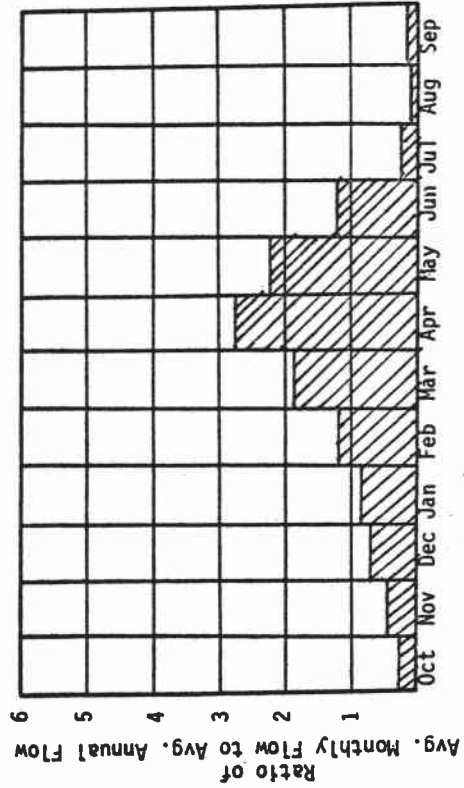
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS

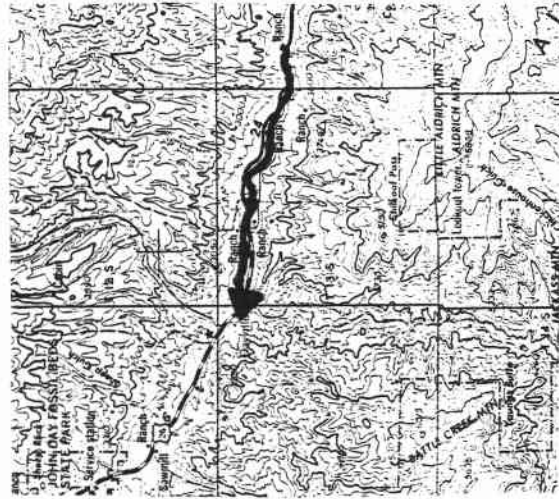
I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GWH I	I
I 95	I 13.2 I	I .24 I	I 2.08 I	I 1.000 I
I 80	I 40.3 I	I .72 I	I 5.82 I	I .916 I
I 50	I 129.8 I	I 2.33 I	I 14.96 I	I .733 I
I 30	I 345.4 I	I 6.20 I	I 28.54 I	I .525 I
I 10	I 998.3 I	I 17.94 I	I 49.09 I	I .312 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 362 CFS



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0020

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 19, T13S, R29E
D. Latitude, Longitude	44° 26' N, 119° 16' W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	222.5 to 232.0

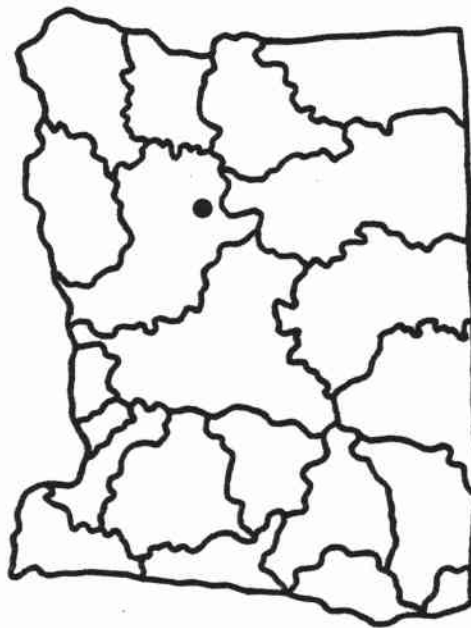
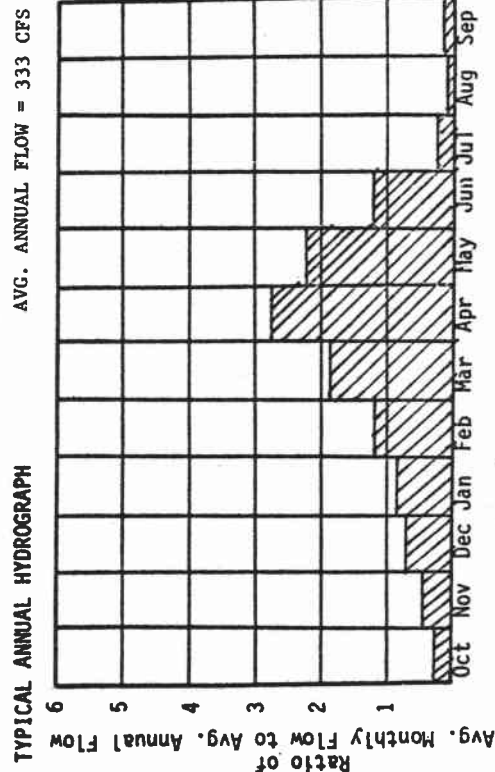
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	2709	Ft. MSL
B. Downstream Elevation of Reach	2542	Ft. MSL
C. Total Available Head in Reach	167	Ft.
D. Average Slope in Reach	17.6	Ft./Mi.
E. Drainage Area above Reach Mouth	901.2	Sq. Mi.
F. Inflow Classification	Natural	

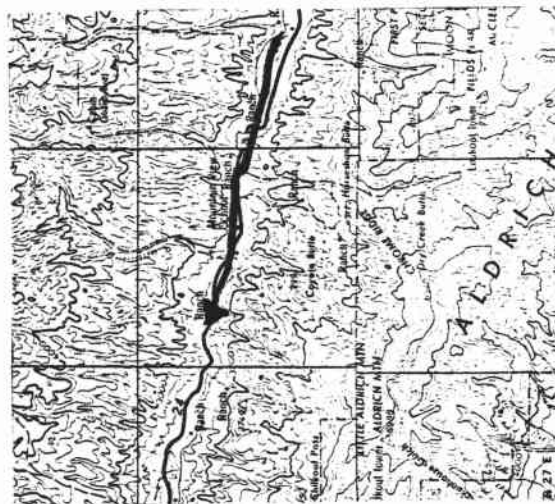
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS				THEORETICAL POTENTIAL			
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE
I	I	I	I	I	MW	I	GWH
I	95	I	11.6	I	.16	I	1.44
I	80	I	35.9	I	.51	I	4.08
I	50	I	117.6	I	1.66	I	10.65
I	30	I	314.7	I	4.45	I	20.43
I	10	I	919.7	I	13.02	I	35.43
						I	1.000
						I	.915
						I	.731
						I	.524
						I	.311

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0021

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 26, T13S, R30E
D. Latitude, Longitude	44°25'N, 119°05'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	232.0 to 247.8

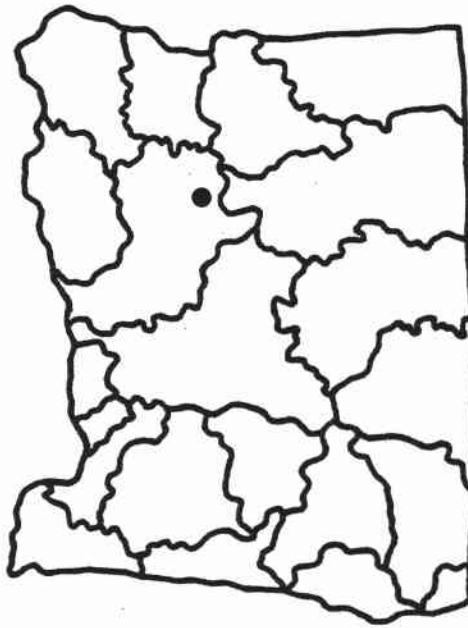
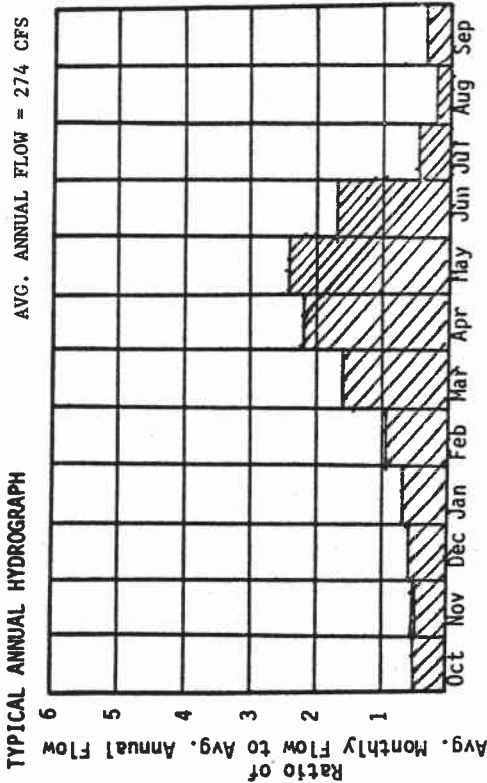
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	3060	Ft. MSL
B. Downstream Elevation of Reach	2709	Ft. MSL
C. Total Available Head in Reach	351	Ft.
D. Average Slope in Reach	23.4	Ft./Mi.
E. Drainage Area above Reach Mouth	764.3	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 8.5 I	I .25 I	I 2.22 I	I 1.000 I
I 80 I	I 27.2 I	I .81 I	I 6.48 I	I .914 I
I 50 I	I 92.8 I	I 2.76 I	I 17.59 I	I .727 I
I 30 I	I 251.9 I	I 7.49 I	I 34.17 I	I .521 I
I 10 I	I 755.8 I	I 22.48 I	I 60.43 I	I .307 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-000-R0022

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 14, T13S, R32E
D. Latitude, Longitude	44°27'N, 118°50'W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	247.8 to 262.0

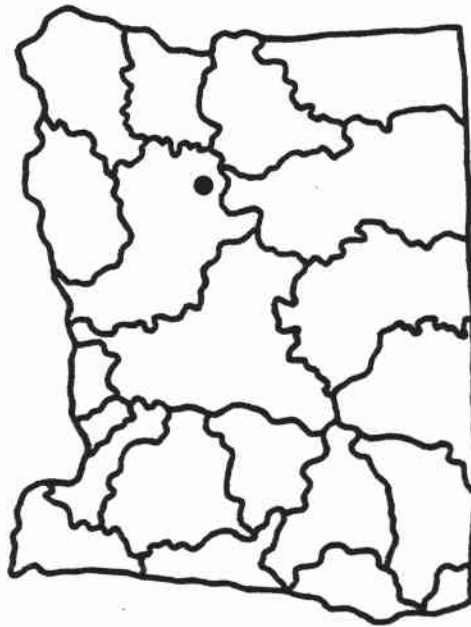
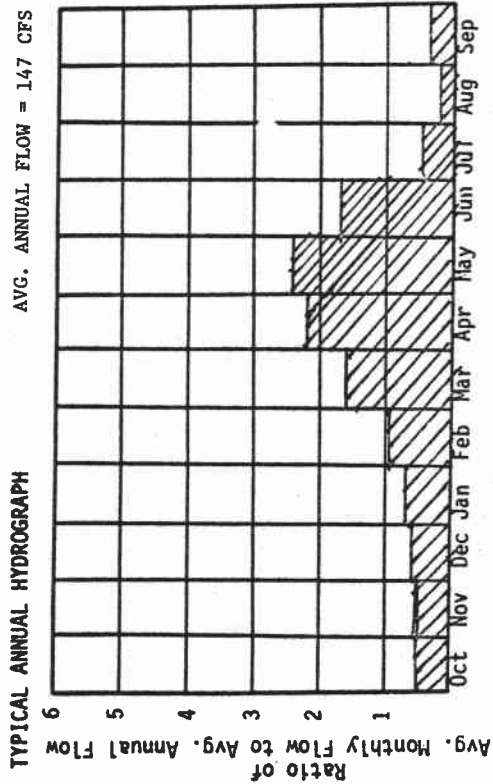
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	3498	Ft. MSL
B. Downstream Elevation of Reach	3060	Ft. MSL
C. Total Available Head in Reach	438	Ft.
D. Average Slope in Reach	30.8	Ft./Mi.
E. Drainage Area above Reach Mouth	400.3	Sq. Mi.
F. Inflow Classification	Natural	

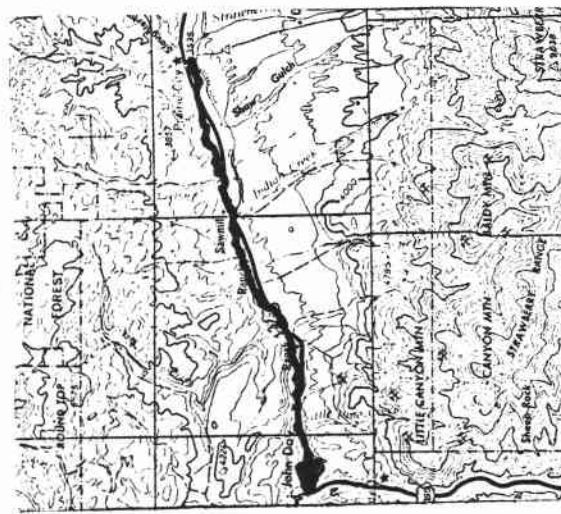
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL

ENERGY CHARACTERISTICS				REACH FLOW DURATION AND THEORETICAL POTENTIAL			
I	PERCENTAGE	I	DISCHARGE	I	THEORETICAL	I	ANNUAL ENERGY
I	I	I	CFS	I	PLANT SIZE	I	AVAILABLE
I	I	I	I	I	I	I	I
I	95	I	3.2	I	.12	I	1.05
I	80	I	11.3	I	.42	I	3.35
I	50	I	43.9	I	1.63	I	10.24
I	30	I	124.7	I	4.63	I	20.75
I	10	I	406.4	I	15.09	I	39.07
I		I		I		I	.296
I		I		I		I	1.000
I		I		I		I	.911
I		I		I		I	.717
I		I		I		I	.512
I		I		I		I	.296

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-200-000-R0023

I. LOCATION

A. State	Oregon
B. County	Grant
C. Township, Range	Sec. 35, T13S, R34E
D. Latitude, Longitude	44° 37' N, 118° 37' W
E. Stream Name	John Day River
F. Major Basin Name	John Day
G. River Mile	262.0 to H.W.

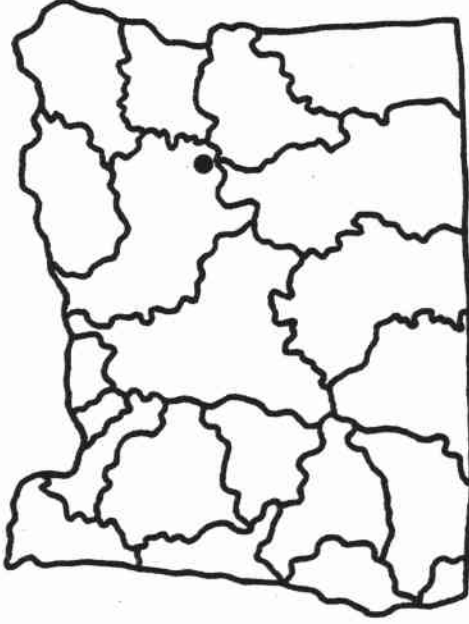
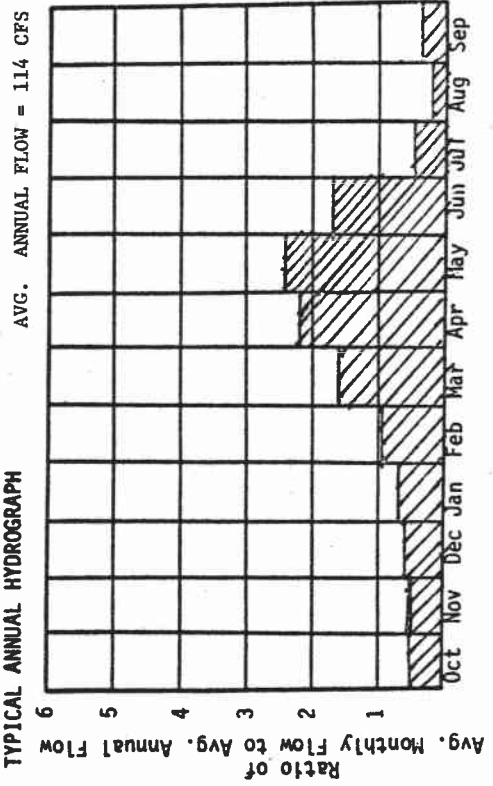
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	--	Ft. MSL
B. Downstream Elevation of Reach	--	Ft. MSL
C. Total Available Head in Reach	66	Ft.
D. Average Slope in Reach	--	Ft./Mi.
E. Drainage Area above Reach Mouth	230.7	Sq. Mi.
F. Inflow Classification	Natural	

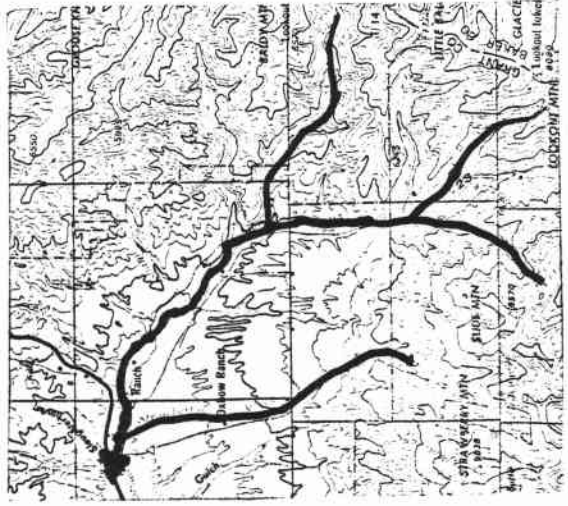
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I	I DISCHARGE I	I THEORETICAL I	I ANNUAL ENERGY I	I PLANT I
I PERCENTAGE I	I CFS I	I PLANT SIZE I	I AVAILABLE I	I FACTOR I
I	I	I MW I	I GMH I	I
I 95 I	I 2.2 I	I .01 I	I .11 I	I 1.000 I
I 80 I	I 7.9 I	I .04 I	I .35 I	I .909 I
I 50 I	I 32.5 I	I .18 I	I 1.13 I	I .713 I
I 30 I	I 93.9 I	I .53 I	I 2.34 I	I .508 I
I 10 I	I 316.4 I	I 1.77 I	I 4.52 I	I .292 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: CANYON CITY



FEASIBILITY, TRANSMISSION AND LOAD RESTRAINTS

REACH IDENTIFICATION NUMBER	FEASIBILITY RESTRAINT				TRANSMISSION AND LOAD CONSIDERATIONS			
	LAND USE RESTRICTIONS	UTILITY DISPLACEMENT	BUILDING DISPLACEMENT	SPECIAL FISH PROBLEMS	DISTANCE TO NEAREST LINE Miles	LINE CAPACITY KVA	LOCAL MARKET	DISTANCE TO CITY > 1000 Miles
02-500-200-								
000-000-R0001	X	-	-	X	1.0	500-B	-	28.0
000-000-R0002	X	-	-	X	2.0	69-PPL	-	33.0
020-000-R0001	X	X	X	X	1.5	2-230/287B	-	40.0
020-000-R0002	-	-	-	X	0.6	23-CB-C	-	51.0
020-000-R0003	X	-	-	X	3.8	23-CB-C	-	53.0
000-000-R0003	X	X	-	X	1.0	230-B	-	40.0
000-000-R0004	X	-	-	X	1.5	230-B	-	39.0
000-000-R0005	X	-	-	X	1.0	230-B	-	36.0
000-000-R0006	X	-	-	X	6.8	230-B	-	38.0
000-000-R0007	X	-	-	X	10.2	230-B	-	47.0
000-000-R0008	X	X	-	X	13.0	23-CB-C	-	55.0
000-000-R0009	X	-	-	X	5.0	69-CP	-	57.0
000-000-R0010	X	-	-	X	2.7	69-CP	-	64.0

FEASIBILITY, TRANSMISSION AND LOAD RESTRAINTS

REACH IDENTIFICATION NUMBER	FEASIBILITY RESTRAINT				TRANSMISSION AND LOAD CONSIDERATIONS			
	LAND USE RESTRICTIONS	UTILITY DISPLACEMENT	BUILDING DISPLACEMENT	SPECIAL FISH PROBLEMS	DISTANCE TO NEAREST LINE Miles	LINE CAPACITY KVA	LOCAL MARKET	DISTANCE TO CITY > 1000 Miles
02-500-200-								
000-000-R0011	X	-	-	X	8.0	69-CP	-	37.7
000-000-R0012	X	-	-	X	13.2	69-CP	-	45.6
000-000-R0013	X	-	-	X	8.6	69-CP	-	37.6
000-000-R0014	X	X	-	X	2.6	69-CP	-	40.2
000-000-R0015	-	X	-	X	10.7	69-CP	-	38.1
040-000-R0001	-	X	-	X	18.5	69-CP	-	37.0
040-000-R0002	-	-	-	X	25.2	69-CP	-	32.6
040-010-R0001	-	-	-	X	24.2	69-CP	-	33.5
040-010-R0002	-	-	X	X	21.6	69-CP	-	33.5
040-010-R0003	-	X	-	X	22.5	69-CP	-	28.3
040-010-R0004	-	-	-	X	20.2	23-CPU	-	25.7
040-010-R0005	-	-	-	X	17.8	23-CPU	-	22.9
040-010-R0006	-	-	-	X	15.5	69-CPU	-	21.0

FEASIBILITY, TRANSMISSION AND LOAD RESTRAINTS

REACH IDENTIFICATION NUMBER	FEASIBILITY RESTRAINT				TRANSMISSION AND LOAD CONSIDERATIONS			
	LAND USE RESTRICTIONS	UTILITY DISPLACEMENT	BUILDING DISPLACEMENT	SPECIAL FISH PROBLEMS	DISTANCE TO NEAREST LINE Miles	LINE CAPACITY KVA	LOCAL MARKET	DISTANCE TO CITY > 1000 Miles
02-500-200-								
040-000-R0003	-	-	-	X	22.4	69-CP	-	30.5
040-000-R0004	-	-	-	X	16.0	69-CP	-	31.5
040-020-R0001	X	X	-	-	8.2	69-CP	-	36.1
040-020-R0002	-	X	X	-	6.2	69-CP	-	36.0
040-000-R0005	-	X	X	X	10.3	69-CP	-	37.0
040-000-R0006	-	X	X	X	9.8	69-CP	-	41.4
040-000-R0007	-	-	-	X	12.1	23-CPU	-	40.2
040-000-R0008	-	-	-	X	5.3	23-CPU	-	35.9
000-000-R0016	-	X	-	X	15.3	69-CP	-	38.2
000-000-R0017	X	X	-	X	20.9	69-CP	-	35.0
000-000-R0018	-	X	X	X	20.0	24.9-C-C	-	29.9
060-000-R0001	-	-	X	X	14.5	24.9-C-C	-	28.7
060-000-R0002	-	-	-	-	10.7	24.9-C-C	-	29.6

