

S
639.313 Montana Board of
F2bmst Natural Resources
1991 and Conservation
in the matter of
water reservation
application nos.

BEFORE THE MONTANA BOARD OF NATURAL
RESOURCES AND CONSERVATION

* * * * *

IN THE MATTER OF WATER)
RESERVATION APPLICATION NOS.)
69903-41O 71895-41I 72578-41L)
70115-41F 71966-41S 71579-41T)
70117-41H 71997-41J 72580-41A)
70118-41H 71998-41S 72581-41I)
70119-41H 72153-41P 72582-41I)
70270-41B 72154-41K 72583-41P)
71537-41P 72155-41A 72584-41S)
71688-41L 72256-41P 72585-41M)
71889-41Q 72307-41Q 72586-41P)
71890-41K 72574-41O 72587-41G)
71891-41P 72575-41K 72588-40C)
71892-41G 72576-40E 73198-41I)
71893-41K 72577-41P 73199-41S)
71894-41I IN THE UPPER)
MISSOURI RIVER BASIN)

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DEPARTMENT OF FISH, WILDLIFE AND PARKS'
SURREBUTTAL TESTIMONY

* * * * *

Surrebuttal testimony submitted in support
of the Department of Fish, Wildlife and Parks'
application for instream flow reservations
in the upper Missouri River Basin

* * * * *

December 31, 1991

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Before the Montana Board of Natural Reso



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CERTIFICATE OF SERVICE

* * * * *

I hereby certify that on the 31st day of December, 1991, the Montana Department of Fish, Wildlife and Parks (Department) filed surrebuttal testimony and exhibits in support of its application for reservations of water in the Missouri River Basin above Fort Peck Dam. A copy of this testimony was served by hand-delivering the original and three (3) true and accurate copies to:

Peter T. Stanley
% Department of Natural Resources and Conservation
1520 East Sixth
Helena, MT 59620

and by depositing true and accurate copies, postage prepaid, in the United States Post Office at Helena, Montana, to the following locations:

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Bozeman, Montana 59715

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710 South Atlantic
Dillon, Montana 59725

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Box 178/210 Main Street
Ennis, Montana 59729

Glasgow Water Rights Field Office
839 1st Avenue South
Glasgow, Montana 59230

Great Falls Public Library
301 2nd Avenue North
Great Falls, Montana 59401

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701 W. Main Street
Lewistown, Montana 59457

Roundup Community Library
Box 717
Roundup, Montana 59072

Sheridan Public Library
Box 417
Sheridan, Montana 59749

John Gregory Library
Box 649
Whitehall, Montana 59759

DATED, this 31st day of December, 1991.



Robert N. Lane
Chief Legal Counsel
Montana Department of Fish, Wildlife
and Parks
1420 East Sixth Avenue
Helena, Montana 59620

LIST OF WITNESSES FOR THE
DEPARTMENT OF FISH, WILDLIFE AND PARKS'
SURREBUTTAL TESTIMONY

1. Fred Nelson - Surrebuttal to Phillip J. Forbes
Surrebuttal to Roger Perkins
2. Liter Spence - Surrebuttal to David E. Nelson
Surrebuttal to Roger Perkins

PREFILED SURREBUTTAL TESTIMONY

OF FREDERICK A. NELSON

on behalf of

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS (MDFWP)

- Q. Please state your name and business address.
- A. Fred Nelson, MDFWP, 1400 South 19th Avenue, Bozeman, Montana 59715.
- Q. What is your present employment?
- A. I am a fisheries biologist employed by the Montana Department of Fish, Wildlife and Parks.
- Q. Please state your educational background and experience.
- A. This information was already presented in my previous prefiled direct testimony I filed for this reservation proceeding on behalf of MDFWP. That testimony included a description of my instream flow-related training and a vita.
- Q. What is the purpose of this testimony?
- A. The purpose is to rebut elements of the prefiled rebuttal testimony of Phillip J. Forbes, Director of Public Service for the City of Bozeman, and Roger Perkins, consultant for the Missouri River Basin Conservation Districts.

Surrebuttal to Phillip J. Forbes

- Q. Mr. Forbes states that "The proposed reservoir in which the reserved water right will be impounded should enhance downstream fisheries on Sourdough Creek." Do you agree with his conclusion?
- A. The proposed reservoir operation plan submitted by the city in its Amended Bozeman Water Reservation Request, prepared by Orrin Ferris, does not support Mr. Forbes' conclusion.
- Q. Why doesn't the operation plan support Mr. Forbes' conclusion that downstream fisheries will be enhanced?
- A. According to the operation plan, instream flows will increase in Sourdough Creek in July, August and September. However, this increase only applies to the approximate two-mile length of creek between the proposed dam and the city's intake structure. This canyon stretch of creek within the National

Forest does not presently suffer from dewatering. The critical flow period for this stretch is winter, the period of lowest flows (Exhibit 4 in MDFWP's direct testimony (USGS 1989)). Augmenting the flows in July, August and September will do little for the fishery in this two-mile-long stretch because these summer months are not the critical flow period.

- Q. How will the proposed reservoir affect flows in the approximate 9.5-mile-long stretch of Sourdough Creek between the city's intake structure and the creek's mouth?
- A. As discussed in my prefiled objector's testimony, this is the stretch of creek that is currently dewatered. Flows in this 9.5-mile stretch reflect a year-round withdrawal of 5.0-6.2 cfs by the City of Bozeman and summer depletions to irrigate 2,385 acres of land served by the senior irrigation rights from Sourdough Creek (Amended Bozeman Water Reservation Request). According to the proposed reservoir operation plan, the only flow that's scheduled to bypass the city's water intake in July, August and September is the amount needed to fulfill all downstream prior irrigation rights. No provisions are made to bypass a minimum instream flow for the fishery. At best, this planned operation will do no more than maintain the present level of stream dewatering. Enhancement of the fishery will not occur under the proposed plan of operation.
- Q. How would you describe the city's proposed reservoir on Sourdough Creek?
- A. The reservoir can best be described as a single-purpose project whose only beneficiary is the City of Bozeman. Reservoir releases will not alleviate an existing problem with stream dewatering in 9.5 miles of creek and the reservoir itself, under the proposed plan of operation, is unlikely to benefit fish and other wildlife.
- Q. Why do you say the reservoir is unlikely to benefit fish and other wildlife?
- A. The proposed reservoir operation plan provides no guaranteed minimum pool to ensure that some fish and wildlife benefits are achieved. The operation study in the city's amended reservation request demonstrates this point. In two years (1974 and 1978), a dead pool of 15 acres - the proposed reservoir's full pool is about 188 acres - would have resulted if the reservoir was in place and operated according to the proposed plan.
- Q. Is the construction of a single-purpose reservoir on public lands a realistic proposal?

- A. MDFWP cannot speculate on whether or not the regulatory agencies would approve such a reservoir for construction on public lands. However, chances for success would likely improve if multiple benefits could be demonstrated, particularly if public funds are sought for construction.

Surrebuttal to Roger Perkins

- Q. On page 2 of his rebuttal testimony under the heading titled Page 5, second A., which refers to Reach #4 of the Madison River, Mr. Perkins states: "Flows are regulated by the MPC Hebgen Lake and Ennis Lake but no additional water was released from storage in 1988 to offset low flows." Is this statement correct?

- A. This statement is incorrect. The Montana Power Co. has an agreement with the MDFWP to maintain minimum flows in the Madison River to help protect fishery values. The minimums are provided through releases at Hebgen Dam. For the USGS gauge site below Ennis Dam, near McAllister, Montana, the agreed-upon minimum is 1,100 cfs. This explains the average flow of 1,068 cfs in August for the dry year of 1988, as noted by Mr. Perkins.

To provide the 1,100 cfs minimum, MPC had to release additional water from Hebgen Reservoir in August 1988. The USGS publication, Water Resources Data Montana Water Year 1988, lists the month-end contents, in acre-feet, for Hebgen Reservoir in 1988 (see Attachment A). On July 31, 1988, the reservoir held 346,300 acre-feet. On August 31, 1988, it held 326,800 acre-feet, a reduction of 19,500 acre-feet during the month of August. This loss averages approximately 317 cfs per day for the month of August over the reservoir inflow.

For the USGS gauge below Hebgen Reservoir, near Grayling, Montana, average flow for August 1988 was 894 cfs (see Attachment A). This is about the 80th percentile flow for the site (USGS 1989). Thus, MPC was releasing a flow of water far greater than expected during a severe drought year, like 1988. This average August release of 894 cfs was needed to ensure that the 1,100 cfs minimum flow below Ennis Dam was met.

- Q. On page 3 of his rebuttal testimony under the heading titled Page 6, last A., which applies to Reach #4 of the Madison River, Mr. Perkins states: "Further, water may be available from existing storage facilities such as Canyon Ferry so as not to interfere with senior rights." Is this statement correct?

- A. I presume Mr. Perkins is referring to the water service contracts that the Bureau of Reclamation is offering for stored water in Canyon Ferry Reservoir. This is being done to

offset hydropower losses that result when flow is diverted for new consumptive uses. This concept only makes sense for new uses from the mainstem Missouri River below Canyon Ferry Dam to Morony Dam. Additional water can be released from storage to replace the amount consumed by new downstream users.

For the Madison River, which is located upstream from Canyon Ferry Dam, releases at Canyon Ferry Dam will not replace the river's depleted flow. Releases at Canyon Ferry Dam will not resolve potential conflicts with MDFWP and other senior water right holders on the Madison River. Also, releases will not resolve conflicts with MDFWP's instream reservation application on the Madison River.

- Q. On page 4 of his rebuttal testimony under the heading titled Page 20, first A., Mr. Perkins refers to MDFWP's Murphy Right for the upper Missouri River. He states that MDFWP's Murphy Right claim for August is 1,500 cfs. Is this correct?
- A. This was correct in 1982 when the claim was refiled under SB 76. When the Murphy Right was originally filed in 1970, the total year-round claim amounted to 2,413,311 acre-feet/year. The claim for August was 4,000 cfs in 1970.

When refiled in 1982, the needed instream flows were quantified and the total claim reduced to 2,013,222 acre-feet/year. The claim for August was reduced to 1,500 cfs.

Subsequent to 1982, the MDFWP gathered additional field data that better defined the instream flow needs for the Missouri River. Thus, the 1982 claim was later amended to reflect this new information. The net effect of this amendment was to reduce the overall claim to 1,925,175 acre-feet/year. In addition to providing updated information, the amendment also corrected errors in the original wetted perimeter data that were submitted in 1982 and also incorporated post-1982 updates in MDFWP's wetted perimeter computer program.

For the month of August, the instream Murphy Right claim was amended from 1,500 to 2,400 cfs to reflect the same updated information presented in MDFWP's 1989 reservation application.

- Q. Under the heading titled Page 20, first A., which refers to Reach #1 of the Missouri River, Mr. Perkins also states: "Flows for spawning and rearing are needed from October to May, outside of the irrigation season." Are instream flows for spawning and rearing only needed from October to May, as stated by Mr. Perkins?
- A. Mr. Perkins' statement is incorrect. Pages 2-584 and 2-586 of MDFWP's reservation application for Reach #1 of the Missouri River state:

"Research studies conducted by the MDFWP in 1980-81 indicated that trout, particularly brown trout, preferred side channels of the Missouri River, rather than the main channel, for spawning (Berg, 1981). The preference for side channels was apparently related to the presence of more suitable depth, velocity, substrate and adjacent cover characteristics.

In 1980 brown trout initiated spawning in side channels of the Missouri River in about mid-October. Spawning peaked in early November, and the incubation period for brown trout eggs extended through early May, when the emergence of young trout from the spawning gravel was completed. Rainbow trout spawned in side channels in late March and early April and some eggs incubated until mid-May. Based on these considerations, adequate flow must be maintained in side channels for trout spawning and incubation from mid-October through mid-May.

Berg's studies further indicated that Missouri River side channels are vital for the rearing of young-of-the-year (YOY) rainbow and brown trout through about mid-October, when large numbers of YOY began moving from the side channels to the main river channel.

In summary, field studies indicated that side channels were vital year-round for trout spawning, the incubation of trout eggs, and the rearing of young."

LITERATURE CITED

Berg, R.K. 1981. Middle Missouri River planning project. Job Progress Report, Federal Aid in Fish and Wildlife Restoration Acts, Montana Proj. No. FW-3-R-9, Job 1-a. 39 pp.

U.S. Geological Survey. 1989. Estimates of monthly streamflow characteristics at selected sites in the upper Missouri River basin, Montana, base period water years 1937-86. U.S. Geological Survey, Water-Resources Investigations Report 89-4082. U.S.G.S., Helena, MT. 103pp.

Frederick A. Nelson, being duly sworn, states that the foregoing testimony is true.

Dated this 30th day of December, 1991.



Frederick A. Nelson

Subscribed and sworn to before me this 30th day of December, 1991.



Notary Public for the State of Montana
Residing at Helena, Montana

My commission expires May 14, 1994

309.5



Water Resources Data Montana Water Year 1988

by R.R. Shields, J.R. Knapton, M.K. White, T.M. Brosten, and J.H. Lambing



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-88-1
Prepared in cooperation with the State of Montana
and with other agencies

Smaller reservoirs in Missouri River basin in Montana--Continued

Monthend contents, in acre-feet, water year October 1987 to September 1988

Date	Lima Reservoir	Ruby River Reservoir	Willow Creek Reservoir	Hebgen Lake	Ennis Lake	Middle Creek Reservoir	Helena Valley Reservoir
Sept. 30	0	6,970	e8,300	322,900	37,310	5,830	b8,200
Oct. 31	6,640	b7,740	---	302,600	34,320	6,080	6,950
Nov. 30	11,190	12,690	---	282,600	30,800	5,950	6,440
Dec. 31	11,610	b17,600	---	274,200	31,270	5,100	6,240
Jan. 31	11,610	23,040	---	275,200	31,560	5,270	5,610
Feb. 29	13,070	b27,050	---	275,200	30,560	5,430	4,880
Mar. 31	15,780	31,900	b14,540	279,600	31,090	5,660	4,380
Apr. 30	38,530	39,840	b17,730	300,300	32,100	6,470	8,490
May 31	36,900	a38,530	b13,750	342,200	37,310	7,950	6,070
June 30	4,360	30,730	a10,080	363,700	36,250	8,170	5,680
July 31	4,320	a17,240	a6,080	346,300	37,770	4,730	3,670
Aug. 31	4,360	a7,890	b3,230	326,800	37,500	3,190	5,270
Sept. 30	5,110	e1,500	---	314,400	36,740	3,020	6,780

Date	Lake Helena	Hauser Lake	Holter Lake	Smith River Reservoir	Gibson Reservoir	Pishkun Reservoir	Willow Creek Reservoir
Sept. 30	10,890	52,150	80,640	0	31,230	20,200	23,620
Oct. 31	10,890	52,150	80,590	0	38,070	20,070	23,210
Nov. 30	10,890	52,150	80,020	a1,790	43,520	19,680	23,350
Dec. 31	10,890	52,150	81,020	a2,310	47,530	18,260	23,480
Jan. 31	11,110	52,520	79,030	a2,730	50,990	18,260	23,890
Feb. 29	10,890	52,150	76,790	b3,150	53,880	18,130	24,300
Mar. 31	10,890	52,150	80,490	b3,150	57,930	17,870	24,440
Apr. 30	10,890	52,150	80,680	b4,980	61,510	23,780	26,880
May 31	10,890	52,150	80,590	b6,700	86,510	27,470	29,770
June 30	10,890	52,150	80,680	a2,660	73,020	19,420	14,440
July 31	10,890	52,150	80,490	b 376	18,650	23,780	7,810
Aug. 31	10,890	52,150	80,490	b 243	4,980	1,870	7,090
Sept. 30	10,890	52,150	81,440	a395	6,540	11,100	7,090

Date	Nilan Reservoir	Lower Two Medicine Lake	Four Horns Lake	Swift Reservoir	Lake Frances	Ackley Lake	Bair Reservoir
Sept. 30	c8,800	b11,510	c13,570	20,540	96,540	a4,500	a 926
Oct. 31	a8,580	b10,630	b13,760	19,860	94,140	---	b1,690
Nov. 30	a8,960	10,260	13,680	21,300	94,040	---	b1,860
Dec. 31	b9,280	c10,260	c13,680	22,480	94,140	---	b1,860
Jan. 31	a9,480	c10,260	c13,680	23,240	93,930	---	b1,860
Feb. 29	a9,670	c10,260	c13,680	23,850	93,480	---	b1,950
Mar. 31	a9,790	c10,260	c13,680	24,980	91,720	a4,200	b2,220
Apr. 30	a9,700	12,340	13,830	23,320	98,020	a4,420	b3,130
May 31	8,360	a12,490	a13,120	26,460	92,960	6,150	b2,770
June 30	a5,470	11,430	10,170	22,100	69,660	5,080	0
July 31	b3,500	8,860	9,750	8,400	52,090	a3,980	0
Aug. 31	a2,810	7,650	8,250	5,270	46,300	b2,860	0
Sept. 30	c2,800	8,050	a6,600	6,180	45,150	a2,840	0

Date	Martinsdale Reservoir	Deadman's Basin Reservoir	Fresno Reservoir	Nelson Reservoir	Mystic Lake	Cooney Reservoir	Tongue River Reservoir
Sept. 30	a2,560	29,810	69,950	49,450	19,240	21,590	31,470
Oct. 31	b2,910	b31,500	a68,450	a47,160	14,780	b17,360	27,400
Nov. 30	b2,880	b32,640	66,560	49,060	11,230	19,000	22,460
Dec. 31	b3,080	35,790	63,980	47,100	7,560	a19,760	22,600
Jan. 31	b3,130	b37,770	b61,130	44,410	3,760	a20,200	22,600
Feb. 29	b3,240	b40,290	58,880	42,520	1,670	21,520	23,200
Mar. 31	b3,570	b44,410	69,780	41,400	257	23,740	28,420
Apr. 30	b6,970	a46,920	b94,710	a40,640	649	23,980	37,220
May 31	b8,870	b38,110	60,780	28,570	11,020	b24,550	64,620
June 30	b2,010	a20,690	33,020	18,250	20,670	24,060	57,000
July 31	b 276	b9,770	b11,640	b8,920	20,820	b17,820	37,850
Aug. 31	b 239	b8,190	b8,330	5,930	19,630	11,030	25,060
Sept. 30	b 248	b7,360	15,850	5,550	19,860	10,980	21,900

a Interpolated.
 b Figure of contents for first day of following month.
 c Estimate .

MADISON RIVER BASIN

06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT

LOCATION.--Lat 44°52'00", long 111°20'15", NE1/4NE1/4NE1/4 sec.22, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, Gallatin National Forest, on right bank 1,500 ft downstream from Hebgen Dam, 8 mi northwest of Grayling, 17 mi upstream from West Fork, and at mile 108.8.

DRAINAGE AREA.--905 mi².

PERIOD OF RECORD.--June 1909 to current year. Prior to October 1938 adjusted runoff only, published in WSP 1309. Prior to October 1949, published as "below Hebgen Reservoir".

REVISED RECORDS.--WSP 1509: 1948. WSP 1559: Drainage area. WSP 1629: 1943. WSP 1709: 1959. WSP 1729: 1943.

GAGE.--Water-stage recorder. Datum of gage is 6,448.47 ft above National Geodetic Vertical Datum of 1929 (after 1959 earthquake). Prior to July 13, 1943, nonrecording gage in stilling well.

REMARKS.--No estimated daily discharges this year. Records good. Flow completely regulated by Hebgen Lake (station number 06038000). Diversions for irrigation of about 1,100 acres upstream from station. U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--79 years, 1,005 ft³/s, 15.08 in/yr, 728,100 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft³/s, Aug. 17, 1959, caused by wave over Hebgen Dam during earthquake, gage height, 5.3 ft, from floodmark, from rating curve extended above 3,500 ft³/s on basis of slope-area measurement of peak flow; maximum observed unaffected by wave over dam, 5,980 ft³/s, June 3, 1943, gage height, 3.69 ft; minimum daily, 5.0 ft³/s, May 9-12, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,430 ft³/s, Aug. 5, gage height, 2.07 ft; minimum daily, 299 ft³/s, June 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1090	1070	1040	748	734	740	639	663	987	687	901	888
2	1090	1070	1040	768	734	742	639	663	990	753	902	887
3	1080	1070	1040	753	734	713	640	664	990	753	899	883
4	1080	1070	1040	769	734	639	642	664	990	753	898	880
5	1080	1070	1040	771	734	640	642	664	991	790	890	878
6	1080	1070	1040	771	734	640	642	664	992	838	908	878
7	1080	1070	1040	762	741	640	641	664	991	838	906	880
8	1080	1070	1040	735	744	641	644	664	889	838	902	878
9	1080	1070	1040	734	744	633	646	758	833	927	899	872
10	1080	1060	1040	726	744	635	646	951	723	993	898	899
11	1080	1060	1040	726	744	638	646	951	497	993	899	898
12	1080	1060	1030	725	744	639	647	951	499	993	894	898
13	1070	1060	1030	725	744	639	647	950	437	993	898	898
14	1070	1060	838	725	744	639	647	954	299	993	898	897
15	1070	1060	708	726	744	639	647	958	299	993	898	896
16	1070	1060	708	725	744	639	647	960	324	993	897	894
17	1070	1060	709	725	744	639	648	961	404	993	896	891
18	1070	1060	712	725	744	639	650	963	450	970	894	889
19	1070	1060	710	726	744	638	654	966	529	879	891	852
20	1070	1060	716	734	742	639	655	970	565	878	889	737
21	1070	1050	712	734	743	639	656	971	648	879	889	663
22	1070	1050	723	734	743	639	656	971	649	960	888	626
23	1070	1050	753	734	742	638	656	971	649	1210	888	627
24	1060	1050	753	734	743	639	656	972	651	1210	888	624
25	1060	1050	753	734	742	638	656	973	653	1170	888	624
26	1060	1060	752	734	741	638	656	977	653	1030	888	680
27	1070	1060	758	734	742	637	657	980	654	1020	888	820
28	1070	1060	755	736	742	637	657	981	656	945	888	819
29	1070	1050	753	734	741	636	657	982	655	908	888	819
30	1070	1050	748	734	---	639	660	983	655	907	888	819
31	1070	---	744	734	---	640	---	984	---	906	888	---
TOTAL	33280	31820	26805	22875	21494	20071	19476	27348	20202	28993	27726	24694
MEAN	1074	1061	865	738	741	647	649	882	673	935	894	823
MAX	1090	1070	1040	771	744	742	660	984	992	1210	908	899
MIN	1060	1050	708	725	734	633	639	663	299	687	888	624
AC-FT	66010	63110	53170	45370	42630	39810	38630	54240	40070	57510	54990	48980
MEAN †	743	724	728	754	741	719	997	1564	1035	652	577	615
CFSM †	.82	.80	.80	.83	.82	.79	1.10	1.73	1.14	.72	.64	.68
IN †	.95	.89	.93	.96	.88	.92	1.23	1.99	1.28	.83	.74	.76
AC-FT †	45710	43110	44770	46370	42630	44210	59330	96140	61570	40110	35490	36580

OBSERVED

CAL YR 1987	TOTAL	320222	MEAN	877	MAX	1470	MIN	178	AC-FT	635200
WTR YR 1988	TOTAL	304784	MEAN	833	MAX	1210	MIN	299	AC-FT	604500

ADJUSTED

CAL YR 1987	TOTAL	316259	MEAN	866	CFSM	.96	IN	13.00	AC-FT	627,300
WTR YR 1988	TOTAL	300479	MEAN	821	CFSM	.91	IN	12.35	AC-FT	596,000

(†) Adjusted for change in contents in Hebgen Lake.

PREFILED SURREBUTTAL TESTIMONY
OF LITER E. SPENCE
ON BEHALF OF THE
MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS (MDFWP)

- Q. Please state your name and business address.
- A. Liter E. Spence, MDFWP, 1420 E. 6th Avenue, Helena, MT 59620.
- Q. By whom are you employed, and in what capacity?
- A. I am employed by the Montana Department of Fish, Wildlife and Parks. My position is Water Resources Supervisor in the Fisheries Division. My primary responsibility is to implement the Department's instream flow program, which includes obtaining and protecting instream flow reservations and other instream flow water rights.
- Q. Have you previously prepared testimony in this proceeding?
- A. Yes. I prepared written testimony as part of DFWP's Prefiled Direct Testimony submitted November 1, 1991, written Objectors Testimony submitted December 3, 1991, and written Rebuttal Testimony submitted December 17, 1991.
- Q. Does that testimony include statements of your qualifications and experience?
- A. Yes, it does. My prefiled direct testimony contains a description of my instream flow training, experience and a biography.
- Q. What is the purpose of this surrebuttal testimony?
- A. The purpose is to comment on the rebuttal testimony of David E. Nelson, U.S. Bureau of Reclamation, and of Roger Perkins, consultant for the Conservation Districts whose testimony has also been adopted by other objectors to DFWP's application.
- Q. To what rebuttal testimony does this testimony first pertain?
- A. To the testimony of David E. Nelson, U.S. Bureau of Reclamation.
- Q. What specific points of Mr. Nelson's testimony are you addressing?
- A. His third, fourth and fifth question and answer (see Appendix A).

- Q. In his third question and answer, Mr. Nelson states that MDFWP supports the Bureau's application because it is consistent with its habitat programs and that DFWP is concerned that the Bureau's Virgelle reservation will reduce fish habitat in side channels of the Missouri River. What is your response?
- A. Mr. Nelson is correct that our objection to the Bureau's application does state that DFWP supports the application because it is consistent with the purpose of DFWP's application for instream flows and with its habitat programs. This statement is incorrect and was inadvertently made in DFWP's objection to the Bureau's application. DFWP's testimony correctly states our position on the Virgelle project.

Until reviewing Mr. Nelson's testimony, we were unaware that our objection to the Bureau's application contained this incorrect statement. The statement is the one we used in our objection in support of the Bureau of Land Management's reservation applications and was incorrectly used in our objection to the Bureau's application.

The Bureau's Virgelle project is not consistent with the purpose of DFWP's reservation application for instream flows because it would remove water from the river system and be in conflict with DFWP's reservation application. Our previous testimony reflects this position.

- Q. Mr. Nelson states in his fourth and fifth question and answer that 250 cfs is less than 1½% of the average annual flow at Virgelle and that DFWP's instream flow reservation will be protected from any withdrawals at the Virgelle diversion because of the BLM's federal reserved water right for the upper Missouri Wild and Scenic River. What is DFWP's response?
- A. Although the BLM claims a federal reserved water right for the Wild and Scenic portion of the Missouri River, negotiations with the Montana Reserved Water Rights Compact Commission are not complete. Therefore, there is no guarantee that the flows claimed by the BLM will be those settled upon through negotiations with the Compact Commission.

As stated by Mr. Nelson, the BLM reserved water right claim provides for July and August flows that are equal to or higher than those requested by DFWP and that the same is true for September and October flows. However, it is important to point out again that, on the average, streamflows in July and August at the 90th and 80th percentiles, are already below the 5400 cfs requested by DFWP (DEIS, pg. C-9). Even in an average water year (50th percentile), existing flows are at or below 5400 cfs in August. In July, a new 280 cfs withdrawal

would not affect DFWP's reservation request (DEIS, pg. C-9). Similarly, in September, DFWP's request of 4300 cfs would be affected at the 90th and 80th percentiles by an additional 280 cfs withdrawal. At the 50th percentile, 4300 cfs would not be affected in September (DEIS, pg. C-9). Therefore, even though the 280 cfs proposed to be withdrawn at Virgelle is less than 1½% of the average annual flow of the Missouri River at Virgelle, existing river flows are, on the average, already at a level where an additional 280 cfs withdrawal at Virgelle will reduce flows necessary for maintaining riffle areas and side channels of this reach of the Missouri River during some time periods.

- Q. To what rebuttal testimony does this testimony next pertain?
- A. To page 5 of the rebuttal testimony of Roger Perkins on behalf of the conservation districts.
- Q. How will you respond to Mr. Perkins' rebuttal testimony?
- A. I will respond by page number according to the sequence presented in his rebuttal testimony, which is attached as Appendix B. The page numbers referred to by Mr. Perkins are those in my objector's testimony.
- Q. Referring to Page 7, Mr. Perkins states DFWP's 150 cfs request for Reach #2 of the Smith River is not practical or in the public interest because the average annual flow for Reach #2 approaches 150 cfs. What is your response?
- A. Mr. Perkins has apparently used the wrong stream gauge. Reach #2 flows are measured at USGS gauge #06077500 near Eden located two miles upstream from Hound Creek, the lower end of Reach #2. Based on the historic record, the average annual flow of the Smith River near Eden is 340 cfs according to the USGS Water Resources Investigations Report 89-4082, page 84, which is Exhibit 4 of our direct testimony. DNRC shows the baseline average annual flow to be 327 cfs from its water availability model which used the 1986 level of development. Average monthly flows for July, August and September are 407 cfs, 141 cfs and 139 cfs, respectively (DEIS, pg. C-8). The USGS report shows July, August and September flows to be 450 cfs, 160 cfs and 150 cfs, respectively (pages 69 and 77).
- Q. Referring to Page 10, Mr. Perkins states that, in the table for baseline flows in the Sun River near Vaughn, the July 90 percent exceedance flow (42 cfs) does not appear to be correct. What is your response?
- A. This is the flow shown in the DEIS on page C-8, Sun River near Vaughn, which I used in my analysis.

- Q. Referring to Page 11, Mr. Perkins again states the July flows appear to be in error in your testimony. What is your response?
- A. The depleted flows I present in the first table on page 11 of my objector's testimony are from the DEIS Appendix C, page C-13, and are the result of the Consumptive Use Alternative. These depleted flows at Vaughn are the basis for deriving the flows in the Sun River below project CSS-200 (which diverts water below the Vaughn gauge) shown in the second table on page 11 of my testimony.
- Q. Referring to Page 15, Big Otter Creek, Mr. Perkins states that "80% chance flows" shown in the table will provide water for irrigation and still provide 5 cfs instream flow request. What is your response?
- A. Flows shown in the table on page 15 are the flows that would occur in Big Otter Creek if the projects on Big Otter and Little Otter creeks are implemented. DFWP has requested 5 cfs in Big Otter Creek. 5 cfs is met or nearly met in July, but contrary to Mr. Perkins' statement, cannot be met in August and September at the 80th percentile flow level. During an average year (50th percentile), the 5 cfs is met or nearly met if the proposed new projects are implemented.
- Q. Mr. Perkins' rebuttal to your objector's testimony has a general theme that the low inflection point flows are more reasonable and will not conflict with future consumptive uses. What is your response?
- A. As has been stated in previous testimony, flows requested using the wetted perimeter inflection point method are the minimum DFWP believes are necessary to maintain a healthy fishery. Instream reservations can only protect the status quo of current flow conditions. We realize the requested flows cannot be met all of the time in some water years, but they can be met at least some of the time.

Some type of fishery is present in all the streams where DFWP has made reservation requests. This in itself shows that flows are available to at least sustain these fisheries. The high inflection point flows requested are those which are currently present during some time periods but are also flow levels to strive for if additional water should become available, especially during low flow periods. Fisheries on some streams cannot be maintained at existing levels if new consumptive uses are allowed without instream flow protection. Mr. Perkins provides no evidence that lower inflection point flows will provide protection for stream fisheries where high inflection point flows have been requested.

Liter E. Spence, being first duly sworn, states that the foregoing testimony is true.

DATED this 31ST day of December, 1991.

Liter E. Spence

Liter E. Spence

Subscribed and sworn to before me this 31ST day of December, 1991.

Debra K. McRae

Notary Public for the State of Montana
Residing at Helena, Montana
My commission expires May 14, 1994

517.13

REBUTTAL TESTIMONY AND EXHIBITS OF THE BUREAU OF RECLAMATION, IN
RESPONSE TO THE THE OBJECTION OF THE MONTANA DEPARTMENT OF FISH,
WILDLIFE AND PARKS (MDFWP) TO RECLAMATION'S APPLICATION 72579-41T

TESTIMONY OF DAVID E. NELSON
HYDRAULIC ENGINEER, BUREAU OF RECLAMATION

- Q. Please state your name and address.
A. David E. Nelson, 2525 Fourth Avenue North, Billings MT 59107.
- Q. Please state your educational and employment experience.
A. I have a B.S. degree in engineering and a masters degree in natural resources management, both from the University of Minnesota. I have worked for the U.S. Public Health Service, the State of Wisconsin, the U.S. Forest Service, and the Bureau of Reclamation. I have worked for Reclamation for over 5 years, with responsibilities primarily in reservoir operations and water rights. My present position is Hydraulic Engineer with the Montana Projects Office of the Bureau of Reclamation.
- Q. What is the position of the MDFWP on Reclamation's application 72579-41T?
A. ~~MDFWP supports our application because it is consistent with its habitat programs (Exhibit 1). However, MDFWP is concerned that Reclamation's Virgelle reservation will reduce fish habitat in side channels of the Missouri River, particularly during July and August (Exhibit 2, testimony of Liter Spence).~~
- Q. How much water does Reclamation propose to divert at Virgelle?
A. Our application is for 280 cubic feet per second, up to 89,000 acre-feet per year (Exhibit 3). This is less than 1 $\frac{1}{2}$ % of the average annual flow of the Missouri River at Virgelle (Exhibit 4). On a seasonal basis (April-October), 89,000 acre-feet represents about 2% of the average river flow (Exhibit 5).
- Q. What response does Reclamation have to the concerns of the MDFWP?
A. The United States Bureau of Land Management (BLM) has a Federal reserved water right for the Upper Missouri Wild and Scenic River. This right has a priority date of October 12, 1976, the date Congress authorized the designation. This water right will be senior to any Missouri reservation issued to Reclamation or MDFWP. A comparison of the BLM right and the MDFWP application is as follows (from Exhibits 6 and 7):

<u>Dates</u>	<u>BLM right</u>	<u>MDFWP reach #5</u>
3/15-5/14	5571 cfs	5571 cfs
5/15-5/18	7470	5571
5/19-7/5 -	14000	14000
7/6-7/15	7470	5400
7-16-8/31	5400	5400
9/1-11/15	5150	4300
11/16-3/15	4305	4300

For all time periods, the BLM right will be the controlling right. The BLM right provides for July and August flows at or above 5400 cfs, a level which Spence testifies will provide adequate flow in the side channels. It also provides for September and October flows at or above 5150 cfs, a flow much higher than the 4300 cfs level which Spence testifies is necessary to maintain main channel riffle areas. The United States (Reclamation) will not violate its own senior water right (the BLM reserved right). Therefore Reclamation's Virgelle reservation would not injure the MDFWP reservation at any time.

Q. What about the cumulative effects of the other Missouri River reservation applications?

A. All Missouri River reservations will have a priority date junior to the BLM reserved right. Thus the BLM reserved right will protect this reach of the river from depletion by any and all of the Missouri River reservations.

REBUTTAL TO SPENCE TESTIMONY

The following rebuttal is presented in response to the testimony of Mr. Liter Spence:

Page 5: The information presented on this page proves that water is not available for the high inflection point (optimum) flow of 90 cfs. The low inflection point of 50 cfs will match the available water supply and will allow the CD development without serious conflict.

Page 6, third ¶: Senior water rights will preclude diversions except available return flow in an extreme year such as 1988. A 50 cfs instream flow is closer to reality than the optimum 90 cfs.

Page 7, first full ¶ under tables: The request for 150 cfs for a "near-optimum fishery" for reach 2 of the Smith River is not practical or in the public interest. This claim approaches the average annual flow in this reach. Even the low inflection point of 80 cfs is optimistic based on water availability. A 40 cfs claim is more reasonable. Obviously, a request of 150 cfs will conflict with future consumptive uses.

Page 8, first full ¶ under tables: If the more reasonable low inflection point flow of 18 cfs is granted, conflict with future irrigation will be minimized.

Page 10, Table for Baseline flows - Sun River near Vaughn: The July value for 90% exceedance does not appear to be correct. In 1988, the mean monthly flow for July was 399 cfs. This value is low relative to 1988 flows and the rest of the data.

Page 11: DFWP has wisely requested a low inflection point flow for this reach of the Sun River because of a marginal fishery and already poor flow conditions. Water quality is probably a factor as well. July flows appear to be in error and are not appropriate. The projected August flows of 128 cfs are nearly equal to the low flow request of 130 cfs. There are many more streams where the low inflection point better fits the water availability of that stream and still provides the minimum instream flow protection intended by the legislators.

Page 13, Bolt Creek: Water availability is a big question as this stream depleted naturally into cavernous limestone (see page 3-213 of DFWP application). Agricultural is better able to use the high spring flows that are available.

Page 15, Big Otter Creek: Those 80% chance flows, adjusted for reduced depletion, will provide water for irrigation and still provide water for the 5 cfs instream flow request.

