
MEMORANDUM

Subject: **Bear River Basin Plan**
 Key Structures and Diversions
 MORRIS BROTHERS IRRIGATION (Lower) DIVERSION

Date: August 7, 2000

Diversion Description: The headgate structure consists of wood form headwall filled with concrete, a 36-inch culvert, and a canal gate.



Diversion Location: Diversion is on the Upper Bear in Wyoming as shown on the location map hereafter.

Latitude N 41° 21' 35.6"
Longitude W 111° 00' 54.4"

Conveyance Description: Open channel canal, approximately 15,840 feet in length. ¹

Direct Flow Water Rights:²

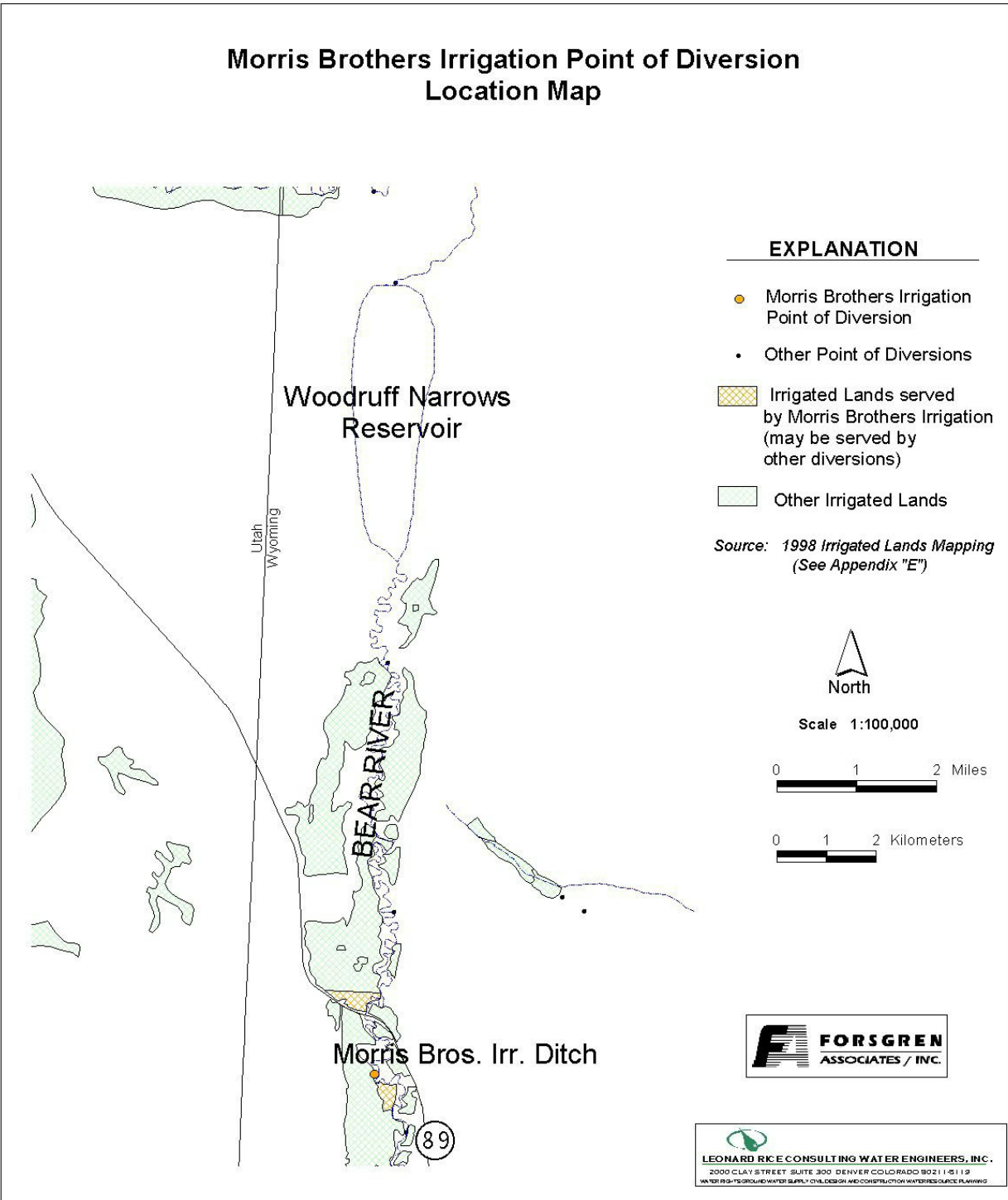
Priority Date	Permit Number	Permitted Use	Permitted Acres	Flow (CFS)	Cumulative (CFS)	Comments
10-01-1880	TERR	Irrigation	903	12.9	12.9	
10-01-1880	TERR	RS		136.5 AF		<i>(Wyoming Downs Res)</i>
10-01-1880	TERR	Irrigation	80	1.14	14.04	

Associated Storage Rights:

Reservoir	Shareholder	Volume (Acre-ft)	Est. % of Shares Used this Diversion ³	Comments
Sulphur Creek	Lee Pierce	55	100%	

Irrigation Practices: All land is flood irrigated. ³

Morris Brothers Irrigation Point of Diversion Location Map



Estimated Diversion Efficiency:

Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	65%
Application Efficiency:	<u>55%</u>
Overall Diversion Efficiency:	36%

Conveyance efficiency is estimated based on total length of main canal. Application efficiency for flood irrigation and sprinkler irrigation is estimated at 55% and 85% respectively.

Crop Types / Consumptive Use: Irrigated acreage is primarily meadow foxtail, etc.³

Return Flows: Return flow is returned to the Bear River (approx. 30%) and Woodruff Narrows (approx. 70%).

The following return flow pattern was adopted for modeling in this study are as follows:

<u>Month</u> <u>(after initial Diversion)</u>	<u>Percent of Return</u>
0	70%
1	20%
2	10%
	100%

Other Operational Information: The Morris Brothers canal is located downstream of the Chapman Canal diversion. Very little water enters the headgate except during high flow periods. During low flow periods, the primary source of water is from Chapman’s excess return flows. It is reported that this return flow increase can be as high as 20 CFS.³

References:

- 1) *USDA -Soil Conservation Service Economic Research Service-Forest Service in Cooperation with the States of Idaho, Utah, Wyoming, Irrigation Conveyance Systems, Working Paper for the Bear River Basin Type IV Study, Idaho-Utah-Wyoming, April 1976*
- 2) *Water rights summary obtained from State Engineer Interstate Reglist – revised April 14, 1999*
- 3) *Irrigation practices based on field investigation and interview with Mr. Don Shoemaker, Water Hydrographer-Commissioner – November 12,1999.*
- 4) *State of Utah Natural Resources, Water Budget Studies – Utah, Bear River Study Area, September 1994*

**BEAR RIVER WYOMING DIVERSIONS
MONTHLY DIVERSION RECORDS**

MORRIS BROTHERS IRRIGATION (Lower)

YEAR	MAY			JUNE			JULY			AUGUST			SEPTEMBER		
	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft
*1970															
1971	54	1.7	107.1	82	2.7	162.6	24	0.8	47.6	9	0.3	17.9	0	0.0	0.0
1972	37	1.2	73.4	192	6.4	380.8	8	0.3	15.9	267	8.6	529.6	86	2.9	170.6
1973	34	1.1	67.4	106	3.5	210.2	33	1.1	65.5	0	0.0	0.0	4	0.1	7.9
1974	122	3.9	242.0	132	4.4	261.8	9	0.3	17.9	0	0.0	0.0	2	0.1	4.0
1975	35	1.1	69.4	83	2.8	164.6	125	4.0	247.9	0	0.0	0.0	0	0.0	0.0
1976	13	0.4	25.8	28	0.9	55.5	80	2.6	158.7	4	0.1	7.9	0	0.0	0.0
1977	8	0.3	15.9	10	0.3	19.8	25	0.8	49.6	27	0.9	53.6	0	0.0	0.0
1978	47	1.5	93.2	81	2.7	160.7	32	1.0	63.5	0	0.0	0.0	44	1.5	87.3
1979	143	4.6	283.6	141	4.7	279.7	6	0.2	11.9	37	1.2	73.4	24	0.8	47.6
1980	0	0.0	0.0	163	5.4	323.3	44	1.4	87.3	16	0.5	31.7	49	1.6	97.2
1981	22	0.7	43.6	55	1.8	109.1	1	0.0	2.0	68	2.2	134.9	0	0.0	0.0
1982	0	0.0	0.0	130	4.3	257.9	46	1.5	91.2	1	0.0	2.0	0	0.0	0.0
1983	120	3.9	238.0	815	27.2	1616.5	177	5.7	351.1	95	3.1	188.4	98	3.3	194.4
1984	558	18.0	1106.8	350	11.7	694.2	21	0.7	41.7	4	0.1	7.9	0	0.0	0.0
1985	395	12.7	783.5	82	2.7	162.6	24	0.8	47.6	0	0.0	0.0	0	0.0	0.0
1986	446	14.4	884.6	34	1.1	67.4	927	29.9	1838.7	0	0.0	0.0	11	0.4	21.8
1987	10	0.3	19.8	45	1.5	89.3	34	1.1	67.4	90	2.9	178.5	35	1.2	69.4
1988	26	0.8	51.6	81	2.7	160.7	57	1.8	113.1	27	0.9	53.6	5	0.2	9.9
1989	180	5.8	357.0	102	3.4	202.3	47	1.5	93.2	5	0.2	9.9	38	1.3	75.4
1990	63	2.0	125.0	184	6.1	365.0	76	2.5	150.7	32	1.0	63.5	113	3.8	224.1
1991	210	6.8	416.5	529	17.6	1049.3	44	1.4	87.3	7	0.2	13.9	20	0.7	39.7
1992	135	4.4	267.8	71	2.4	140.8	109	3.5	216.2	17	0.5	33.7	47	1.6	93.2
1993	224	7.2	444.3	124	4.1	246.0	54	1.7	107.1	0	0.0	0.0	0	0.0	0.0
1994	59	1.9	117.0	54	1.8	107.1	79	2.5	156.7	16	0.5	31.7	53	1.8	105.1
1995	0	0.0	0.0	126	4.2	249.9	52	1.7	103.1	10	0.3	19.8	166	5.5	329.3
1996	38	1.2	75.4	123	4.1	244.0	80	2.6	158.7	62	2.0	123.0	98	3.3	194.4
1997	18.5	0.6	36.7	141.2	4.7	280.1	11	0.4	21.8	0	0.0	0.0	21.1	0.7	41.9
1998	13.9	0.4	27.6	98.7	3.3	195.8	87.3	2.8	173.2	2.6	0.1	5.2	0	0.0	0.0
1999	27	0.9	53.6	99	3.3	196.4	66	2.1	130.9	0	0.0	0.0	0	0.0	0.0

AVERAGES

3.4 207.8

4.9 291.5

2.6 162.7

0.9 54.5

1.1 62.5

Notes: *1. No published records are available for this diversion for 1970